

## **3 PROJECT ALTERNATIVES**

This chapter describes a reasonable range of project alternatives consistent with the requirements of the National Environmental Policy Act (NEPA), Tahoe Regional Planning Agency (TRPA) ordinances and procedures, and the California Environmental Quality Act (CEQA). The action alternatives carried forward for detailed evaluation and consideration in this joint Environmental Impact Statement/Environmental Impact Statement/Environmental Impact Report (EIS/EIS/EIR) have each been formulated to accomplish most of the basic objectives of the project discussed in Chapter 2, Purpose and Need.

### **3.1 REQUIREMENTS FOR ALTERNATIVES**

Consideration of alternatives that would achieve the basic objectives of a project is required under NEPA, TRPA, and CEQA regulations. To aid informed decision-making and public participation, four action alternatives were developed that comply with the specific requirements of these regulations and meet the underlying purpose and objectives of the project (described in Section 2.2, Purpose and Need and Project Objectives). This Draft EIS/EIS/EIR also describes and evaluates the No Project/No Action alternative (Alternative 5) to provide the decision-makers and the public with an overview of what could reasonably be expected to occur if none of the action alternatives were approved and implemented. This chapter also describes various alternatives that were considered but eliminated from detailed evaluation because they are either infeasible, do not meet most of the basic project objectives, or do not avoid or substantially lessen one or more of the potentially significant effects of other alternatives (see Section 3.5, Alternatives Considered but Eliminated from Detailed Evaluation, below).

#### **3.1.1 NATIONAL ENVIRONMENTAL POLICY ACT REQUIREMENTS**

The Council on Environmental Quality Regulations for Implementing NEPA Section 1502.14 require that an EIS:

- ▲ explore and objectively evaluate all reasonable alternatives,
- ▲ discuss reasons for eliminating considered alternatives,
- ▲ consider each alternative in a level of detail that allows for comparative evaluation,
- ▲ include reasonable alternatives not within the jurisdiction of the lead agency,
- ▲ analyze the no action alternative,
- ▲ identify the lead agency's preferred alternative, and
- ▲ include appropriate mitigation measures not already included in the proposed action or alternatives.

#### **3.1.2 TAHOE REGIONAL PLANNING AGENCY**

Environmental Impact Statements are addressed in Article VII of the TRPA Compact, which requires that TRPA prepare and consider a detailed EIS before deciding to approve or carry out a project. The EIS must study, develop, and describe appropriate alternatives to the recommended courses of action for any project that involves unresolved conflicts concerning alternative use of available resources.

#### **3.1.3 CALIFORNIA ENVIRONMENTAL QUALITY ACT**

In accordance with Section 15126.6 of the State CEQA Guidelines, the alternatives analysis must:

- ▲ describe a range of reasonable alternatives for the project that could feasibly attain most of the basic objectives of the project, but would substantially lessen or avoid any of the significant effects of the project;

- ▲ focus on alternatives capable of avoiding or substantially lessening any of the significant environmental impacts of the project, even if they may be more costly or could otherwise impede some of the project's objectives; and
- ▲ evaluate the comparative merits of the alternatives.

In addition to the guiding principles for selection of alternatives set forth above, the State CEQA Guidelines require that the environmental document evaluate a no project alternative (that is, the consequences of taking no action); identify alternatives that were initially considered but then eliminated from detailed evaluation and provide the reasoning for their dismissal; and identify the “environmentally superior alternative.” In addition, CEQA Guidelines Section 15126.6(f)(2)(A) requires that the analysis of alternatives identify whether any of the potentially significant effects of the project would be avoided or substantially lessened by placing the project in another feasible location. Accordingly, this document includes a discussion of potential off-site alternatives that were considered but rejected for detailed evaluation and the reasons for their rejection (see Section 3.5, Alternatives Considered but Eliminated from Detailed Evaluation, below).

This document provides comparable detail in the analysis of the alternatives. A full range of reasonable alternatives (including the applicant's preferred alternative, identified as the Proposed Alternative) is presented for public review. The alternatives described and evaluated in detail in this document include variations on alignments and single circuit versus double-circuit configurations (a double circuit would put portions of the 625 and 650 Lines on the same poles) to provide flexibility to the US Forest Service (USFS), TRPA, and the California Public Utilities Commission (CPUC) in selecting the alternative that best meets the basic project objectives while taking into account the significant or potentially significant impacts on the human and physical environments. The Proposed Alternative was identified only after public scoping comments were received, environmental studies were completed, and input from the lead and cooperating agencies was considered.

## **3.2 EXISTING ELECTRICAL SYSTEM**

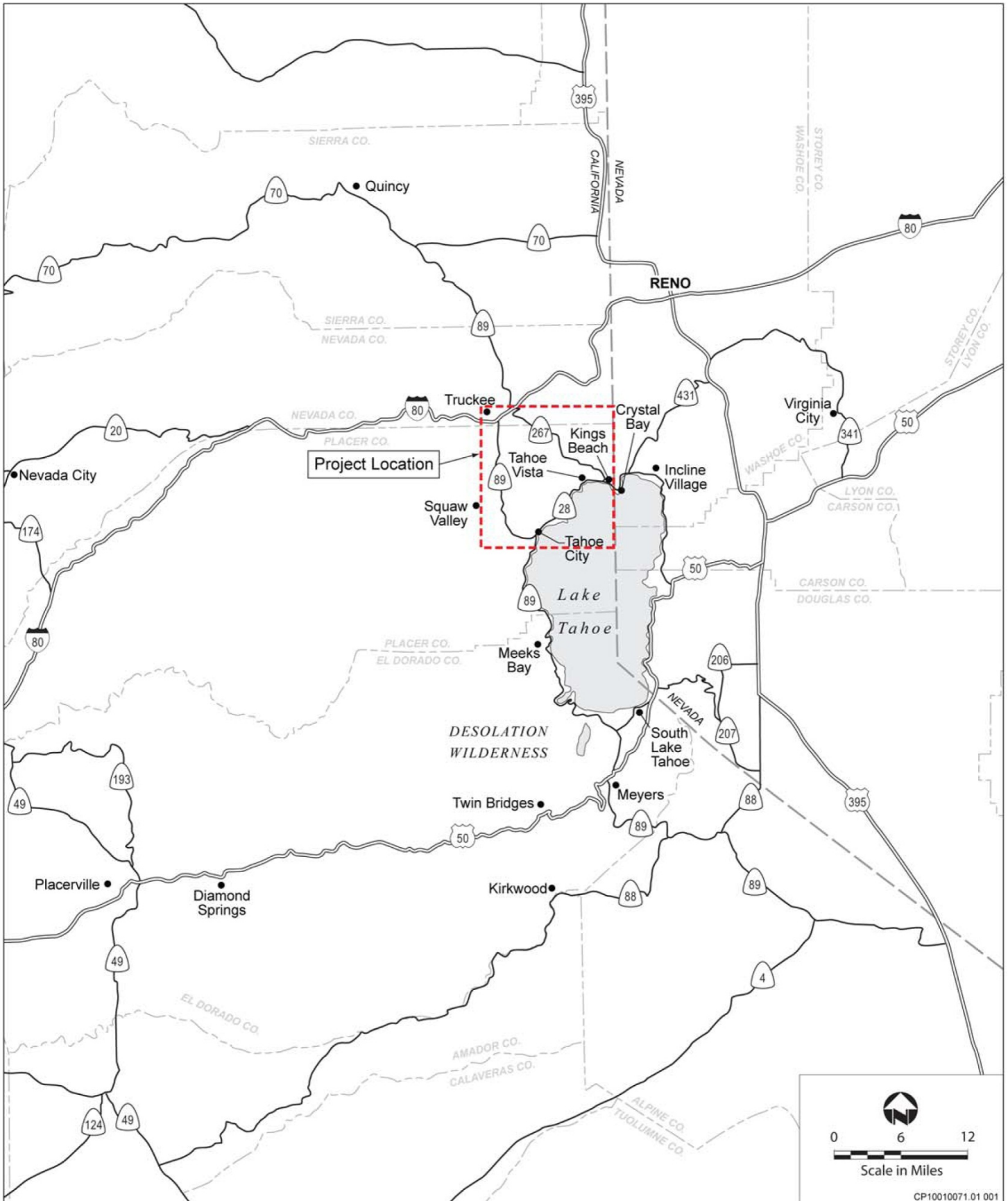
### **3.2.1 LOCATION**

The existing North Lake Tahoe Transmission System is located in northeastern Placer County and southeastern Nevada County, California (see Exhibit 3-1). The project components are predominantly located on lands managed by the US Department of Agriculture, USFS; these lands are located in the Tahoe National Forest and in the Lake Tahoe Basin Management Unit (LTBMU). The project area also includes the Town of Truckee and the unincorporated communities of Kings Beach and Tahoe City, as well as Martis Creek Lake managed by the US Army Corps of Engineers (USACE) and Burton Creek State Park (see Exhibit 3-2). The project area is predominantly forested, with segments of residential, industrial, and tourism-related land uses where the project components enter more developed communities.

### **3.2.2 SYSTEM OVERVIEW**

The electrical lines and associated infrastructure are owned by the California Pacific Electric Company (CalPeco), the applicant. The North Lake Tahoe Transmission System (so named by CalPeco although the loop includes components both within and outside of the Lake Tahoe Basin) is a loop comprised of 60 kilovolt (kV) and 120 kV electrical lines connecting Truckee, Squaw Valley, Tahoe City, and Kings Beach. As depicted in Exhibit 3-2, the North Lake Tahoe Transmission System currently consists of:

- ▲ one 60 kV power line (609 Line) and one 120-kV power line (132 Line) from Truckee to Squaw Valley,
- ▲ one 120 kV power line (currently operating at 60-kV) from Squaw Valley to Tahoe City (629 Line),
- ▲ one 60 kV power line from Tahoe City to Kings Beach (625 Line), and
- ▲ one power line from Kings Beach to Truckee (650 Line) that is 60 kV except for a segment (650-5) near the Placer/Nevada county line that was previously upgraded to 120 kV, but is currently operating at 60 kV.



Source: Adapted by Ascent Environmental in 2012

Exhibit 3-1

Regional Location



Typically, a 30-foot wide access/operations/maintenance right-of-way (ROW) easement is held for the existing lines and associated facilities, although the width of the easement may vary based on the needs for system operations and maintenance, the line voltage, negotiations with landowners, and other factors. The 60 kV loop serves four substations, and the single 120 kV circuit serves two substations. The 60 kV loop is fed from the Truckee Substation and the 120 kV circuit is fed from North Truckee Substation. See Exhibit 3-3, which depicts the current configuration of the North Lake Tahoe Transmission System.

### **3.2.3 SYSTEM ELEMENTS PROPOSED FOR MODIFICATION**

The following is a detailed description of the components of the existing electrical system that are being considered for upgrade or modification as part of the 625 and 650 Electrical Line Upgrade Project. Exhibit 3-2 includes numbered segments to orient the reader to the respective sections of existing power line described, by segment, in the sections below.

#### **625 LINE**

The existing 60 kV 625 Line generally runs in a northeast-southwest direction between the communities of Kings Beach and Tahoe City. The alignment is set back from (typically by a mile or more), but roughly parallel to, Lake Tahoe's northwest shoreline. Most of the 625 Line is located on land managed by the LTBMU and is within TRPA's planning area.

##### **SEGMENT 625-1**

Segment 625-1 ties into the Tahoe City Substation south of the Truckee River and west of State Route (SR) 89. It is a double-circuit line that also includes the 60 kV 629 Line. The lines share tangent poles (poles used for straight lines), but are split onto separate poles at angle points (where the power line conductor [i.e., cable] changes direction in less than a 30 degree angle) so that guy wires can be used to anchor the poles. The line parallels the southern bank of the Truckee River for over 1,000 feet. Existing power poles are located in the riparian area north of the Tahoe Rim Trail and adjacent to the river. The power line crosses the Truckee River and SR 89 north of the California Department of Transportation's (Caltrans') Tahoe City Maintenance Station and approximately 0.25 mile west of the intersection of SR 89 and SR 28. At the crossing, there is a wooden power pole adjacent to the southbound lane of SR 89. The line continues northwest for approximately 1,000 feet on the north side on SR 89 before splitting into the 629 Line and Segment 625-2 of the 625 Line. The existing 625 Line contains distribution underbuild (smaller electrical distribution lines on the same pole, below the larger electrical line) near the Tahoe City Substation (the locations and fate of underbuild is described in more detail later in this chapter).

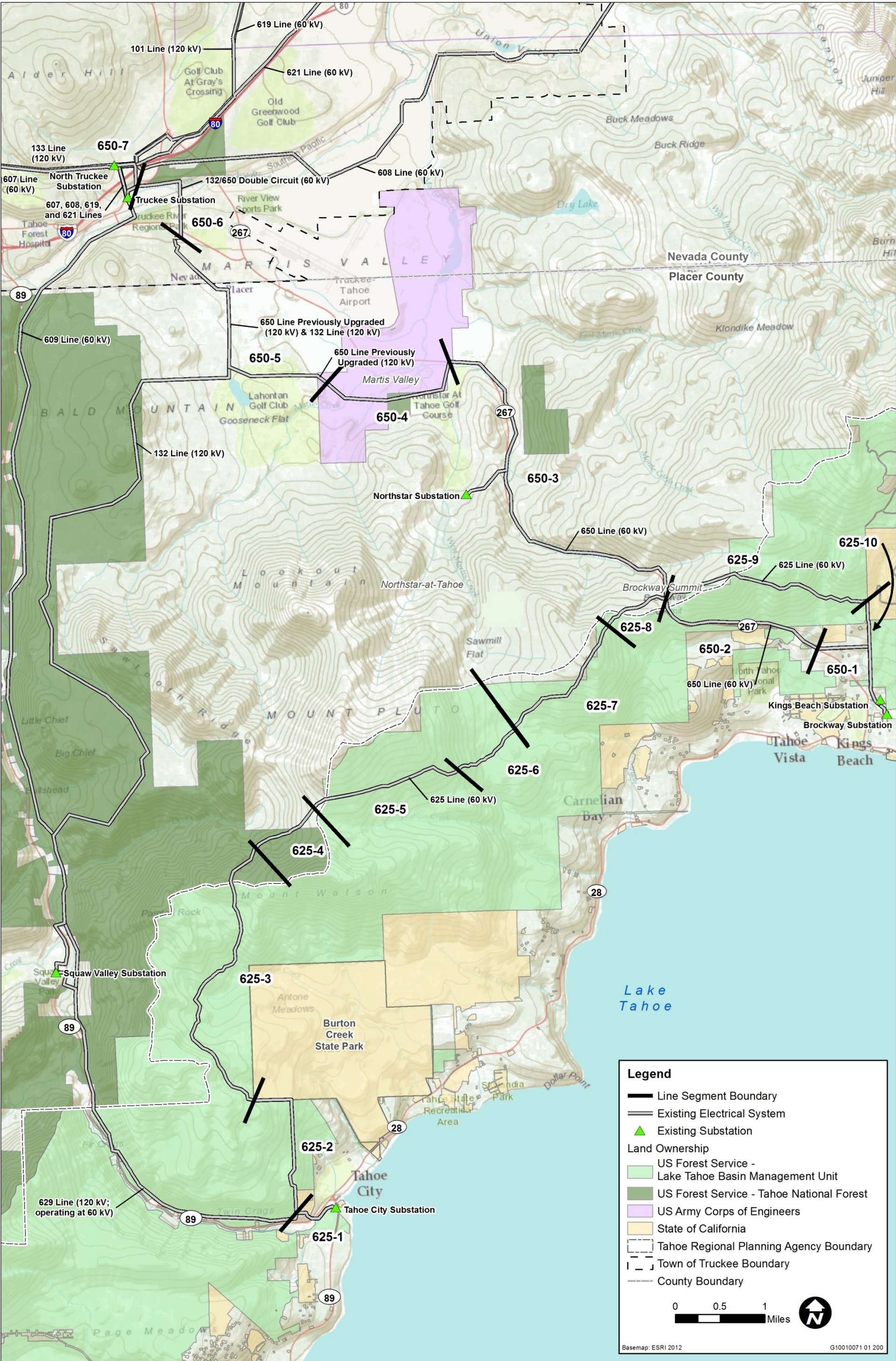
##### **SEGMENT 625-2**

The 625 Line trends north for approximately 1.25 miles through LTBMU land. The line then turns west for approximately 0.5 mile and follows the southern border of Burton Creek State Park. A portion of the line ROW encroaches into Burton Creek State Park and there are several poles just within the park boundaries.

##### **SEGMENTS 625-3, 625-4, 625-5, 625-6, 625-7, AND 625-8**

These segments generally follow, but are typically set back from, the Fiberboard Freeway through land managed by the LTBMU and Tahoe National Forest for approximately 9.5 miles to SR 267 at Brockway Summit. These segments span a relatively remote area between the shoreline of Lake Tahoe and the Northstar-at-Tahoe Resort, and, as such, access to these electrical structures is limited.





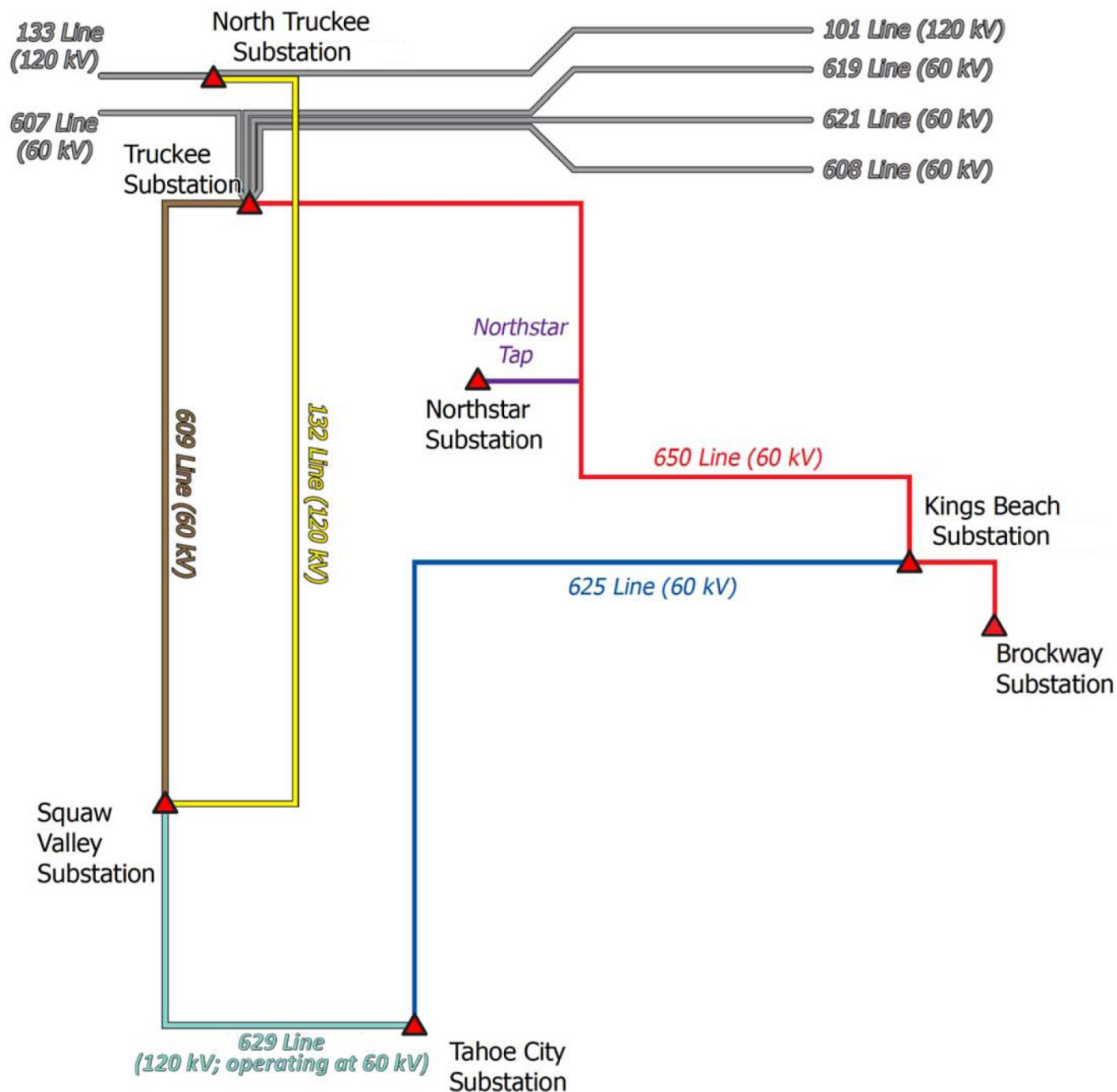
Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-2

Existing Electrical System







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Source: Received from Sierra Pacific 2010; adapted by Ascent Environmental in 2012

Exhibit 3-3

Existing Electrical System Schematic



## **SEGMENT 625-9**

East of SR 267, Segment 625-9 roughly follows the southeast trajectory of SR 267 through USFS land for approximately 2.25 miles, offset to the northeast of the highway by over 0.5 mile.

## **SEGMENT 625-10**

Segment 625-10 extends over 1 mile south to the Kings Beach Substation, which is located within the Kings Beach Diesel Generation Station that is situated north of the intersection of Deer Street and Speckled Street in Kings Beach.

## **650 LINE**

The 650 Line spans approximately 14 miles between the Truckee Substation, and the Brockway Substation in Kings Beach. This power line is primarily 60 kV, but facilities have been upgraded to accommodate 120 kV near the Tahoe Truckee Airport and the Placer/Nevada county line.

## **SEGMENT 650-1**

From the Brockway Substation, Segment 650-1 parallels the southern side of Speckled Street for approximately 150 feet to the west side of Deer Street. It parallels the western side of Deer Street for over 200 feet, and continues approximately 650 feet north to the Kings Beach Substation. From the Kings Beach Substation, the alignment is the same as Segment 625-10 for over 0.5 mile, with poles for the 650 Line side-by-side with poles for the 625 Line, to north of Canterbury Drive. At this point, Segment 650-1 heads west for over 0.5 mile to the eastern side of SR 267.

## **SEGMENTS 650-2 AND 650-3**

Segments 650-2 and 650-3 are 60 kV power line segments that parallel SR 267 for approximately 6 miles. The divide between the segments is located where the 625 Line crosses Brockway Summit (SR 267). The alignment is adjacent to the eastern side of the highway, except for a stretch of less than 0.5 mile south of Highlands View Road where the alignment switches to the western side of the highway.

## **Northstar Tap**

Within Segment 650-3, the 0.5 mile long Northstar Tap runs east-west between the Northstar Substation, located at the intersection of Stable Road and Highlands Valley Road, and the 650 Line east of SR 267.

## **SEGMENT 650-4**

Segment 650-4 spans Martis Valley south of SR 267 through an approximately 40-acre National Forest System (NFS) parcel managed by the Tahoe National Forest, and Martis Creek Lake managed by the USACE.

## **SEGMENT 650-5**

Segment 650-5 is approximately 3 miles in length. In the 1990s, this segment was upgraded to 120 kV capacity and portions of the segment were converted from an overhead to an underground configuration. The undergrounding was financed by property owners in the vicinity.

## SEGMENT 650-6

In Segment 650-6, the 60 kV electrical line is on a double circuit with the 120 kV 132 Line (i.e., the lines currently share poles). The line heads north, crossing Brockway Road, Estates Drive, the Truckee River, and the Union Pacific Railroad tracks to the north side of Glenshire Drive. The alignment parallels the north side of Glenshire Drive for approximately 0.5 mile to the intersection of Donner Pass Road.

Between the Truckee Donner Public Utility District's Martis Substation (located between the Truckee River and Estates Drive) and the North Truckee Substation, the 132 Line is owned by NV Energy.

## SEGMENT 650-7

Segment 650-7 spans between the North Truckee Substation and the Truckee Substation. From the North Truckee Substation, the power line crosses Comstock Drive and parallels the northern side of Comstock Drive for less than 1,000 feet to the east before turning south to the north side of Donner Pass Road, crossing Interstate 80 (I-80) and East Jibboom Street. This portion of Segment 650-7 is underbuilt with the 60 kV 132 Line.

Segment 650-7 then parallels the north side of Donner Pass Road for less than 600 feet before turning south, crossing over Trout Creek Road, Donner Pass Road, and East Keiser Avenue to reach the Truckee Substation. This portion of the segment is configured with a distribution line underbuild.

## SUBSTATIONS

Substations are high-voltage electric facilities that contain equipment used to regulate and distribute electrical energy. These facilities receive power from power lines and can perform various functions including regulation and distribution of energy, stepping voltage up and down, limiting power surges, and converting power from direct current to alternating current or vice versa. These facilities are also used to switch high-voltage power into different routes (cables and lines) or, as loading changes, into different transformers. The following facilities are part of the North Lake Tahoe Transmission System.

### BROCKWAY SUBSTATION

The Brockway Substation is located in Kings Beach, at the southeast corner of the intersection of Speckled Street and Deer Street. This substation is one terminus of the 650 Line.

### KINGS BEACH SUBSTATION AND DIESEL GENERATION SITE

The Kings Beach Substation is located within the Kings Beach Public Utility Center, which includes the Kings Beach Diesel Generation Station and is just north of the intersection of Speckled Street and Deer Street in Kings Beach. Currently, the existing 650 Line intercepts the Kings Beach facility before terminating at the Brockway Substation. The Kings Beach facility is one terminus of the 625 Line.

### NORTHSTAR SUBSTATION

The Northstar Substation is located near the intersection of Stables Road and Northstar Drive in Placer County. This substation is the termination point for the Northstar Tap. The existing substation operates at 60 kV (though currently constructed at 120 kV) and serves the electrical demands from the Northstar area.

## SQUAW VALLEY SUBSTATION

The Squaw Valley Substation is located at the intersection of Squaw Valley Road and SR 89 in Placer County. The 132, 609, and 629 Lines connect to the Squaw Valley Substation.

## TAHOE CITY SUBSTATION

The Tahoe City Substation is located west of SR 89 and south of the Truckee River. This substation is the termination point for the existing 625 Line and 629 Line.

## TRUCKEE SUBSTATION

The Truckee Substation is one terminus of the 650 Line and is located near the intersection of Donner Pass Road and East Church Street in Truckee. The 60 kV 607, 608, 609, 619, and 621 Lines also connect to this substation.

## NORTH TRUCKEE SUBSTATION

The North Truckee facility is located on Pioneer Trail Road just south of Comstock Drive. NV Energy owns the North Truckee Substation. The 120 kV 133, 132, and 101 Lines connect to this substation.

### 3.2.4 SYSTEM RELIABILITY, OPERATION, AND CAPACITY

System capacity can be quantified in terms of megavolt amperes (MVA), which is a measure of electrical power that considers voltage and amperes, similar to a watt. The North Lake Tahoe Transmission System has a normal capacity of 88 MVA. The Kings Beach Diesel Generation Station is capable of providing 11 MVA of additional (or back-up) capacity.

Electrical demand on the North Lake Tahoe Transmission System is the greatest during the winter months, and typically peaks during the week between the Christmas and New Year holidays as a result of electric heating and ski resort loads. Coincident peak demand is the electrical demand at the time when system-wide customer use is expected to be highest. Coincident peak loading of the North Lake Tahoe Transmission System has remained relatively stable over the last six years, between 79 and 88 MVA (see Table 3-1).

Table 3-1 North Lake Tahoe Transmission System Coincident Peak Demand 2007 – 2012	
Year	Coincident Peak
2007	86.7 MVA
2008	82.9 MVA
2009	78.6 MVA
2010	86.0 MVA
2011	85.9 MVA
2012	88.4 MVA
MVA= megavolt-amperes. Source: Schlichting 2013	

Electrical systems have reduced operating capacity when an element of the system fails (often due to external circumstances, such as weather). These events are referred to as contingencies. Failure of either a single element, or multiple elements that are physically or electronically linked and fail together as one, is referred to as a single contingency outage. System reliability is influenced by the likelihood and consequences of a

contingency. In general, five principle mechanisms could be responsible for outages associated with the power lines in the North Lake Tahoe Transmission System:

- ▲ high winds blowing poles over,
- ▲ trees falling onto the lines,
- ▲ snow loading,
- ▲ forest fires, and
- ▲ equipment failures.

Customer demand in the North Lake Tahoe Transmission System is essentially at the system's capacity, and there are circumstances where the system load has exceeded its current capacity. For example, on December 30, 2012 the North Tahoe area experienced extremely heavy tourism and ski resort activity. The result was an extremely large electric demand peak. The North Lake Tahoe Transmission System was forced to run at an overloaded capacity. Where the system is designed to supply a maximum of 88 MVA of electricity to the north Lake Tahoe area, on December 30, 2012 there was a system peak of 88.4 MVA. During this event, the Kings Beach diesel generators were run to provide sufficient power and the system operators were monitoring the line temperature and other elements of the system. This exceedance of design capacity resulted in a risk of damage to the line conductors. In addition, had one of the lines or other parts of the system gone out of service, there would have been blackouts over a significant area.

During outages or high demand, the Kings Beach Diesel Generation Station is currently the only source of the system's ability to maintain the current maximum system loads. However, even with the Kings Beach Diesel Generation Station in operation, the North Lake Tahoe Transmission System is not able to remain fully functional with a single contingency outage. Under the existing conditions, damage to some portion of the system could result in substantial voltage drops to other parts of the circuit. Potential scenarios affecting voltage in the system include: damage to the 650 Line, resulting in insufficient capacity to power Kings Beach; damage to the 629 Line or 132 Line, affecting capacity to Tahoe City; and, reduction in the overall system capacity from 88 MVA to 61 MVA, as a result of an outage of the 132 Line (99 MVA to 70 MVA if using backup supplies from the Kings Beach Diesel Generation Station).

If a single contingency outage occurs during the coincident peak load, customer demand must be forcibly reduced through a process known as load shedding. This is typically handled through an established plan of rolling blackouts that balances the load reduction. Once the peak demand has passed, the system is restored to normal operation. It is important to note that, from a regulatory standpoint, utilities are only able to do this in an emergency situation and are not permitted to use rolling blackout as a planning tool or regular mode of operation because they are obligated to provide reliable service under the Public Utilities Code. Due to the large area that can be affected during load shedding, it is not possible to avoid blackouts at critical facilities, including those for police/sheriff, fire, medical, and home care facilities. In addition, operation of the Kings Beach Diesel Generation Station is limited by its Placer County Air Pollution Control District permit to 721 hours per year. As a result, the facility's operating hours are generally reserved for multiple-contingency events (outages on multiple elements of the system).

It should be noted that the operation of the diesel generation facility at Kings Beach is necessary as emergency back-up and as offset when loads approach peak, and is not designed or intended to support normal base load. While the proposed project would help reduce the emergency dependency on the diesel generators, it would not provide back-up power such that the diesel generators could be removed. Alternatively, it is also important to understand that running the diesel generators at full operation would not replace the need for the proposed system upgrades. It would be inefficient and contrary to the system design for CalPeco to operate the diesel generators for any other reasons than anticipated or current emergencies. These units are expensive to operate, have greater air emissions than other power sources, and have limited annual hours of operation permitted by

regulatory agencies. In the planning of this project, the diesel units are not considered as a single contingency facility. Instead, they are in place for emergency situations, which can regularly occur in the Tahoe area due to storms and other events. Using the diesel generation facility in this manner is consistent with the regulations of the North American Electric Reliability Corporation and the Western Electricity Coordinating Council, and is an approved and warranted component of the system as emergency back-up.

### 3.3 ACTION ALTERNATIVES

As described in Chapter 2, Purpose and Need, the applicant has determined that improved system reliability and resilience to outages would be achieved through upgrade of the existing 625 and 650 Lines and associated substations from 60 kV to 120 kV, which would permit the entire system to operate at 120 kV. The four action alternatives considered in this EIS/EIS/EIR are variations on addressing six key project components:

- ▲ rebuild of the existing 650 Line (with potential for realignments based on alternative);
- ▲ removal and realignment of two short segments of the 650 Line to straighten the line and remove angle points (simplifying line construction and maintenance);
- ▲ rebuild a 1.6-mile section of the existing 132 Line;
- ▲ rebuild of the Northstar Tap into the Northstar Fold (a “fold” allows for service to be maintained at a substation in the event of an interruption in service on the power lines feeding into either side of substation; for this project, this means that the Northstar Substation could be fed from the 650 Line to the north or south, whereas currently it is a single source feed);
- ▲ upgrade, modification, and/or decommission of six substations; and
- ▲ removal of the existing 625 Line and construction of a new, rerouted 625 Line.

These improvements would increase the ability to maintain the current maximum system loads during an outage on any one of the four legs of the system (i.e., 625 Line, 650 Line, 609 Line, and 629 Line), and decrease reliance on the Kings Beach Diesel Generation Station. In addition, rebuilding and realigning the power lines would reduce the likelihood of outages associated with high winds, felled trees, snow loading, and forest fires, as well as improve access to the lines for maintenance and repair activities.

Section 3.3.1, below, describes the features common to all action alternatives. This includes the primary project components (including power lines and substations), new conductors and power poles, ROW requirements, and general construction activities. Sections 3.3.2 through 3.3.5 describe the identified action alternatives. Section 3.3.6 describes the common project implementation processes of the action alternatives (e.g., phasing and schedule). Overviews of Alternatives 1 through 4 are depicted in Exhibits 3-4A through 3-4D, respectively. Detailed maps are provided in Appendix B. Alternative 1 was developed in the Proponent’s Environmental Assessment (PEA) prepared by the project applicant (Sierra Pacific Power Company at that time) as part of the original permit application submitted to the CPUC in 2010. Alternative 2 is a modified alternative, which is similar to Alternative 1 (PEA Alternative), but includes rerouting of some portions of the alignment based on public and agency input received during scoping, additional information gathered during detailed field reviews, and further progress on project engineering and design. The intent of the segment reroutes was to avoid or minimize effects on biological, visual, or cultural resources. Alternative 3 is a road focused alternative, which reroutes the 625 Line to more closely follow the Fiberboard Freeway (paved road between the Mount Watson area north of Tahoe City and the Brockway Summit area) and other area roadways and places more of the 650 Line alignment along SR 267. Alternative 3 (Road Focused Alternative) includes a double-circuit option segment alternative that is referred to as Alternative 3A. One intent of Alternative 3 (Road Focused Alternative) is to maximize the proximity of project facilities to existing roadways in order to minimize the need for new access ways and otherwise minimize ground disturbance and environmental effects. Alternative 4 (Proposed Alternative) is a combination of Alternative 3 (Road Focused Alternative) for the 625 Line improvements and





Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-4A

Alternative 1 (PEA Alternative)



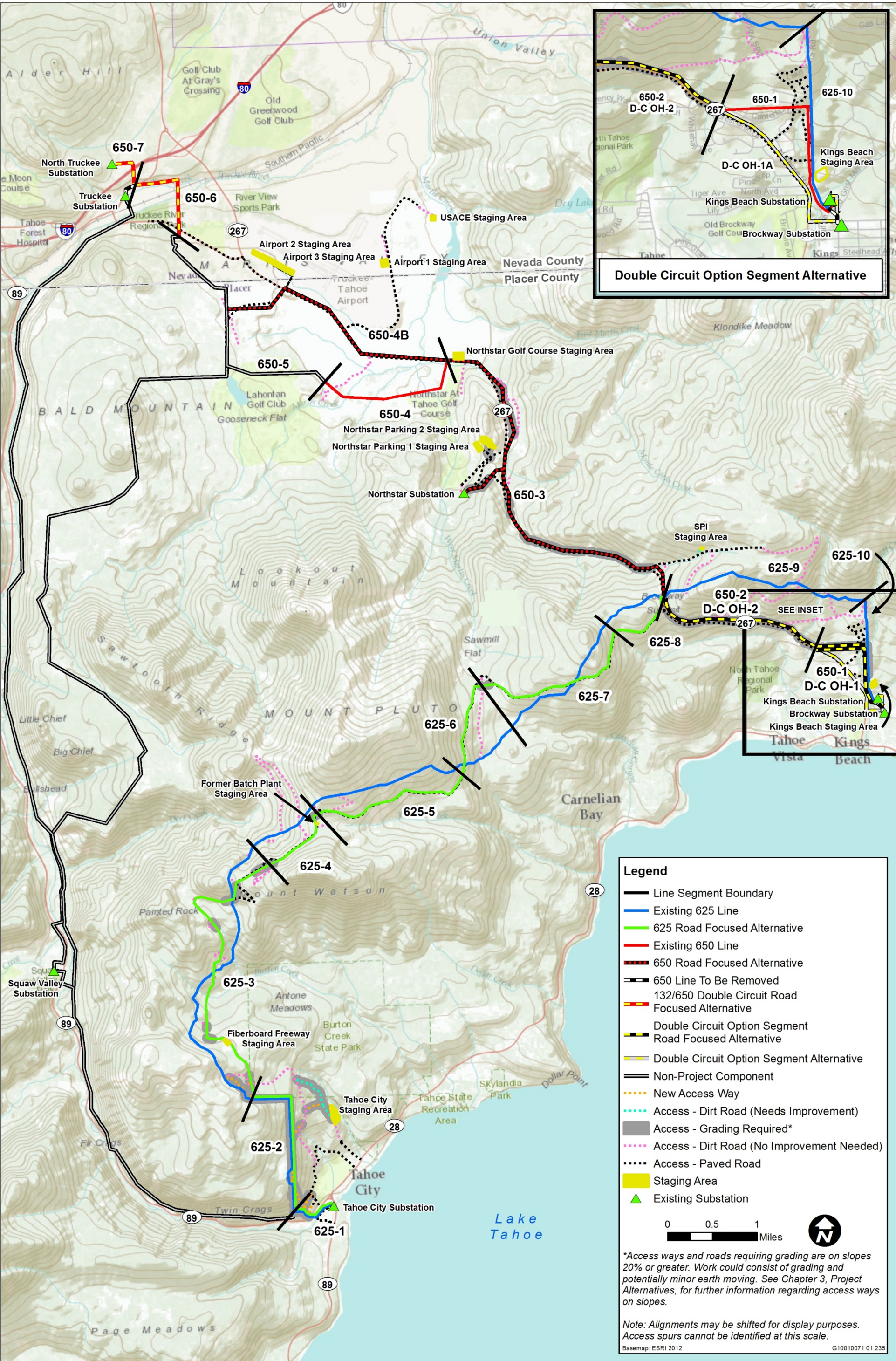




Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012







Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-4C

Alternative 3 (Road Focused Alternative)







Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-4D

Alternative 4 (Proposed Alternative)





elements of Alternative 1 (PEA Alternative) and Alternative 3 (Road Focused Alternative) for the 650 Line improvements. Alternative 4 (Proposed Alternative) allows facilities to be in proximity to existing roadways, while maximizing the use of the already upgraded portion of the 650 Line in Segment 650-5. Alternatives 2, 3, and 4 all contain double-circuit segments that place both the 625 and 650 Lines on the same poles, which could minimize the project footprint. Alternative 5 is the No Project/No Action Alternative.

### **3.3.1 COMMON PROJECT FEATURES OF THE ACTION ALTERNATIVES**

#### **PRIMARY PROJECT COMPONENTS**

Upon completion of the following six project components common to all of the action alternatives, the upgraded system (120 kV for the entire loop) would be capable of 114 MVA versus the current 88 MVA. This would better accommodate peak loads identified in Table 3-1, North Lake Tahoe Transmission System Non-Coincident Peak 2006 – 2008, and allow continuation of service during a broader range of line interruption scenarios without use of the Kings Beach Diesel Generation Station.

#### **REBUILD OF THE EXISTING 650 LINE**

Approximately 10 miles of the existing 650 Line would be rebuilt. Various segments would either be rebuilt in the existing ROW and alignment, or constructed along a new alignment, depending on the alternative being considered. Where the existing alignment would be followed, new poles would generally be placed 10 feet from the existing poles (which would be removed as part of the project), but in some areas new poles could be farther from existing poles to best support the system design. The 650 Line would be reconducted (i.e., old electrical line would be replaced with new line) with 397.5 thousand circular mil (MCM) all aluminum (AA) conductor (non-specular material) to allow transmission at 120 kV.

#### **REALIGNMENT OF 650 LINE SEGMENTS**

As stated above, various segments of the 650 Line could be relocated based on the alternative considered. However, for all action alternatives two short segments of the 650 Line would be removed; the segment originating at the Truckee Substation to the point where the 650 Line connects with the 132 Line in the Town of Truckee, and the segment that currently connects the Brockway Substation with the Kings Beach Substation. In both of these instances, the existing poles with telecommunications/cable lines would be left in place and the power line components would be removed. The poles would be topped (i.e., the extra height that accommodated the 60 kV line would no longer be needed and would be cut from the top of the pole). The current distribution lines coming out of Brockway Substation would either be extended (underground) to the Kings Beach Substation and the 60 kV tie would be eliminated, or, if Brockway is to remain in its current state, these lines would remain as they are now. (See description of the sub-alternatives of upgrade, modification, and/or decommissioning of substations below.)

#### **REBUILD A 1.6-MILE SECTION OF THE EXISTING 132 LINE**

The 132 Line is an existing 120 kV line that extends from Truckee to Squaw Valley. In the Town of Truckee, approximately 32 poles would be replaced and the line would be modified to allow a double-circuit configuration with the 650 Line and operation at 120 kV. The new steel poles would generally be placed 10 feet from the current wood pole locations.

## REBUILD OF THE NORTHSTAR TAP INTO A FOLD

The existing 60 kV Northstar Tap would be rebuilt into a line fold that would operate at 120 kV, tying into the existing terminals. This activity would require replacement of approximately 14 wood poles with 11 steel poles and approximately 0.5 miles of 397.5 MCM AA conductor (non-specular material). The existing Northstar Tap contains a distribution underbuild along its entire length; this distribution circuit would be transferred to the poles associated with the Northstar Fold.

## UPGRADE, MODIFICATION, AND/OR DECOMMISSIONING OF SUBSTATIONS

The Northstar, Squaw Valley, Kings Beach, Tahoe City, and North Truckee substations would be modified to accommodate the new 120 kV loop system, and the Brockway Substation would be decommissioned and the equipment would be removed. The future use of vacated Brockway Substation land is unknown at this time. All substation improvements would take place within parcels owned by CalPeco. See Appendix C, Substation Plot Plans and Elevation Drawings, for graphical representations of proposed changes to the substations.

### Kings Beach and Brockway Substations

The existing 60 kV Kings Beach Substation is proposed to be reconstructed as a 120 kV substation to accommodate the upgraded 650 and 625 lines. The substation rebuild would include 120 kV switches, two 120 kV/14.4 kV transformers, and 14.4 kV switchgear, plus the four relocated 14.4 kV distribution feeders which are currently above ground and would be placed underground, as described below. To facilitate the upgrade of this facility, some activities would occur outside of the existing facility's fence line; however, all work would occur within the larger CalPeco-owned parcel that houses the Kings Beach Utility Center.

Four new underground 14.4 kV distribution feeders at the Kings Beach Substation would be installed that would connect to the existing overhead distribution lines to maintain distribution service in the project area. Three distribution feeders would exit the Kings Beach Substation to the south via three underground duct packages, totaling approximately 500 feet in length. The feeders would be installed within the access road for the Kings Beach Substation and would continue within Deer Street to the intersection with Speckled Street. At this point, one of the feeders would head east, intersecting an existing distribution pole at the northeast corner of Deer Street and Speckled Street. The remaining two feeders would continue south, crossing Speckled Street to the intersection with Cutthroat Avenue, where the second feeder would head east and the third feeder would head west within Cutthroat Avenue until they intersect existing distribution poles. Sectionalizing switches would be installed on the existing overhead distribution lines on Deer Street and Cutthroat Avenue. The remaining distribution feeder would also exit the substation underground and travel west to a point approximately 25 feet beyond the fence line where it would intersect with the existing 650 Line poles that lead to the Brockway Substation. These poles would be topped, leaving the distribution circuit intact. New risers (i.e., conduits that house a power line vertically on a pole) would be installed at the termination of the underground portions of these four feeders to facilitate the conversion to an aboveground facility. The underground distribution facilities would be installed in a duct bank (where there are multiple conduits in one trench) comprised of two 6-inch-diameter polyvinylchloride (PVC) conduits. Approximately nine underground splice vaults (i.e., buried compartments typically accessed by a man-hole on the surface) measuring approximately 12 feet long, 6 feet wide, and 8 feet deep would be installed in line with the duct bank to facilitate pulling the conductor during construction, and access during inspection and maintenance activities. New lighting would be installed at the Kings Beach Substation in accordance with TRPA outdoor lighting codes. The lighting would be used on an as-needed basis during the operation and maintenance of the substation. The proposed substation rebuild, with these elements, would allow removal of the existing equipment at the Brockway Substation, located within the residential neighborhood between Speckled Avenue and Cutthroat Avenue, just east of Deer Street. The determination of future site use has not yet been determined, but ownership would remain with CalPeco.

### **Amendment of Plan Area Statement 019, Martis Peak**

Electrical substations are defined as *Public Utility Centers* in Table 21.4-A of the TRPA Code. Although the expanded substation rebuild is proposed on a parcel with an existing Public Utility Center, this use is not permissible on the subject property, which is located in Plan Area 019 – Martis Peak, a Conservation Plan Area, as defined in the Plan Area Statement (PAS). Therefore, the existing Public Utility Center (including the existing Kings Beach Substation and the proposed, new substation) is an approved nonconforming use, by definition, in the TRPA Code (Section 21.2.3). Although the project, as proposed, would allow the decommissioning of the Brockway Substation, the rebuild of the Kings Beach Substation would constitute *expansion, intensification, and/or modification* of a nonconforming use as defined in the TRPA Code (see TRPA Code Sections 21.2.3 and 21.5). To facilitate the proposed expanded substation in the most appropriate location (the site of the existing substation), TRPA proposes to address the nonconforming use through a staff-initiated amendment to PAS 019, Martis Peak, by adding Public Utility Centers as a special use within a new Special Area 1 of the PAS. In accordance with TRPA Code, such a PAS amendment is considered a project, a Regional Plan amendment, and a Plan Area amendment, subject to specific findings requirements, as described below.

To approve any project, TRPA must find, in accordance with Sections 4.2 and 4.3 of the TRPA Code, that:

- ▲ the project is consistent with, and will not adversely affect implementation of the Regional Plan, including all applicable Goals and Policies, PASs and Maps, Code and other TRPA plans and programs;
- ▲ the project will not cause the environmental threshold carrying capacities to be exceeded; and,
- ▲ wherever federal, state, or local air and water quality standards are applicable for the region, whichever are strictest must be attained and maintained pursuant to Article V (d) of the Tahoe Regional Planning Compact.

To amend the Regional Plan, including PASs and Maps, TRPA must find, in accordance with Sections 4.5 of the TRPA Code, that the Regional Plan, as amended, achieves and maintains the thresholds.

Finally, to approve any Plan Area Amendment, TRPA must make the following findings in accordance with Section 11.8.4 of the TRPA Code.

- ▲ The amendment is substantially consistent with the plan area designation criteria in subsections 11.6.2 and 11.6.3.
- ▲ If the amendment is to expand an existing urban plan area boundary or to add residential, tourist accommodation, commercial, or public service as permissible uses to a non-urban plan area, TRPA shall find that the amendment will make the plan area statement consistent with an adopted policy or standard of the Regional Plan, and that the amendment will satisfy one or more of the following criteria.
  - The amendment corrects an error that occurred at the time of adoption, including but not limited to a mapping error, an editing error, or an error based on erroneous information.
  - The amendment enables TRPA to make progress toward one or more environmental thresholds without degradation to other thresholds as measured by the Chapter 16: Regional Plan and Environmental Threshold Review, indicators.
  - The amendment is needed to protect public health and safety and there is no reasonable alternative.

TRPA's findings in support of the staff-initiated PAS amendment are detailed in a separate findings document, and are summarized as follows.

- ▲ Adding public utility centers as a permissible use in PAS 019 would make the existing substation located on the diesel generator property a conforming use, and would allow transfer of the functions currently provided by the Brockway Substation in the Kings Beach Industrial Community Plan to this property, thereby allowing its decommissioning.

- ▲ Reconstruction of the substation would result in the consolidation of electrical facilities within one secure compound area, out of view from the general public.
- ▲ The proposed PAS amendment is consistent with the goals of the Land Use and other elements of the TRPA Goals and Policies Plan which does not contain any specific restrictions on placement of public utility centers in conservation plan areas, such as PAS 019. A similar public utility center facility (a substation) exists in PAS 095 (Trout/Cold Creek) located on the south shore of Lake Tahoe near the old Meyers landfill site. PAS 095 is also a Conservation Plan Area, and Public Utility Centers are listed as a special use in PAS 095.
- ▲ Based on the Initial Environmental Checklist prepared for the plan area statement amendment, there are no significant environmental impacts associated with the new land use, and no impacts that would exceed environmental threshold carrying capacities.
- ▲ Adding a new public service land use to the Plan Area would not diminish the standards for air and water quality because the amendment only affects an electrical distribution facility where water quality and air quality standards are currently applicable. There are no additional impacts to air or water quality associated with the proposed amendment, and all future projects will be required to meet appropriate air and water quality development standards.
- ▲ The proposed PAS amendment would not affect the ability of the Regional Plan to achieve and maintain the thresholds, as documented in the Initial Environmental Checklist and this EIS/EIS/EIR.
- ▲ The proposed amendment would be limited to developed, private property, which contains existing regional-serving electrical facilities within a secure, fenced compound. Most of the area affected by the amendment is high capability land and the proposed plan area amendment would prohibit new or expanded public utility center facilities on low capability land. The affected property is immediately adjacent to the Kings Beach Industrial Community Plan Area and is not isolated from other development. For security and public safety reasons, the affected property is closed to the public and is not suitable for recreation, non-intensive agricultural, or resource management uses for this reason.
- ▲ The proposed PAS amendment would add a new public service use (public utility centers) to a Conservation Plan Area and would not expand an urban boundary.
- ▲ The proposed amendment corrects an error that occurred at the time of adoption; specifically, the adopted PAS does not identify the existing, extensive, and essential regional electrical distribution system that exists within the boundaries of the Plan Area.
- ▲ The amendment is a public health and safety measure and there is no reasonable alternative to plan area amendment because: 1) it would consolidate electrical facilities onto one property, reducing the potential for trespass and vandalism; 2) the electrical compound would be much less visible to the public and less of a potentially attractive hazard; and 3) the construction of an expanded Kings Beach Substation within the boundaries of the Kings Beach Industrial Community Plan (and therefore in close proximity to nearby residences) is unreasonable because a superior, more secure site is available that would consolidate electrical facilities onto one secure property, thereby improving efficiency.

As described above, one of the findings necessary to support a proposed PAS amendment include a finding that there are no reasonable alternatives. Consistent with this requirement, two alternative configurations for the Kings Beach Substation that would not require amendment of the Martis Peak (019) PAS were considered. These two configurations would involve locating the Kings Beach Substation within the Kings Beach Industrial Community Plan Area, where “Public Utility Center”—the use category that includes substations—is a permissible use under the special use provisions of the community plan (Tahoe Regional Planning Agency and Placer County 1996). The Kings Beach Industrial Community Plan Area is generally bounded by the northern boundary of the block of parcels north of Speckled Avenue, Cutthroat Avenue to the south, Secline Street to the west, and a few parcels of Coon Street to the east. It includes the southernmost portion of the Kings Beach Substation area, within the fence line at the northern terminus of Deer Street.

Under the first alternative configuration (Option 1, for purposes of this discussion), the Kings Beach Substation facilities would be located in the Kings Beach Industrial Community Plan and a new access way would be located in the Martis Peak Plan Area. The substation rebuild, including the 120 kV switches, two 120 kV/14.4 kV transformers, and 14.4 kV switchgear would be constructed on parcel 090-041-006 (refer to Exhibit 4.2-7). This parcel is owned by CalPeco and is within the Kings Beach Industrial Community Plan Area. The parcel would require alteration and upgrade of the access roads to allow adequate access to the facility. With this option, the Brockway substation would be decommissioned. To accommodate this, the footprint of the substation would be larger to accommodate the distribution functions that would be redirected from Brockway. Because of parcel size limitations and the addition of the functions currently served by Brockway, the substation layout would require the needed access way improvements to be outside the parcel, within the Martis Peak Plan Area (on parcel 090-090-029) and subject to the Martis Peak PAS. Although the new access road might be permissible as an accessory use, the Martis Peak PAS does not otherwise permit the construction of new roads.

A second alternative configuration (Option 2, for purposes of this discussion) also considered constructing the substation on parcel 090-041-006, but without an access road through the Martis Peak Plan Area (refer to Exhibit 4.2-8). Instead, the access way would be completely within the same parcel, within the Kings Beach Industrial Community Plan Area. With this configuration, there would not be sufficient space for the additional equipment that would be required to allow for the decommissioning of the Brockway Substation, as under the first option. Under this option, the Kings Beach Substation would include the 120 kV switches and one 120/60 kV transformer, but the parcel would not accommodate the 14.4 kV switchgear. As such, the Brockway Substation would need to remain operational in its current location to accommodate this function and the existing distribution feeders would remain in their current overhead state. The existing 60 kV overhead line from the Kings Beach facility to Brockway Substation would remain primarily in its existing route but would need to have a new termination into the relocated substation site. The purpose of this configuration is to address the TRPA PAS compliance, which would require all modifications to occur within the Kings Beach Industrial Plan area.

### **Northstar Substation**

To accommodate the upgrade of the existing 60 kV tap, a new 120/60/14.4 kV transformer (to accompany the existing 120/60/14.4 kV model already on site) would be installed. Once the North Lake Tahoe 120 kV system is completed, both transformers would be tapped at 120 kV and the substation would operate at 120 kV. In addition, all line terminals would be upgraded with new breaker switches. All work would occur within the existing substation fence line.

### **Squaw Valley Substation**

A minor 120 kV electrical transfer equipment upgrade and the installation of a new 120 kV circuit breaker at the Squaw Valley Substation would be necessary to operate the previously upgraded 629 Line. Work at this substation would occur within the existing substation fence line.

### **Tahoe City Substation**

The Tahoe City Substation would be rebuilt from 60 kV to 120 kV. This substation would be one terminus of the new 625 Line. The 120/60/14.4 kV transformer would be relocated and a new 120/14.4 kV transformer and two new 120 kV breakers would be installed. These new components would be installed within the existing substation fence line. To upgrade the substation while maintaining distribution capabilities, portable (temporary) transformers would be required during construction and would be connected to the 625 Line or 629 Line using temporary poles. These transformers would be located on the 64-acre parcel managed by the USFS immediately to the south of the Tahoe City Substation. The portable transformers would be mounted on two trailers, measuring 8 feet wide by 40 feet long. To ensure that the temporary transformers would not interfere with operation of the Tahoe City Transit Center, CalPeco would coordinate with the USFS and Placer County well in advance of construction to obtain permission to use the parcel. CalPeco would work to site the temporary transformers in undeveloped areas or in area designated for parking and restrict the public from this area. Temporary power poles would be similar to the existing 60 kV poles and would be required to maintain



distribution capabilities. Upon completion of the Tahoe City Substation upgrade, these temporary poles and transformers would be removed and the 625 and 629 Lines would be connected to the permanent, new transformers.

A stormwater infiltration trench would also be installed at the Tahoe City Substation. This trench would be 2 feet wide by 20 feet long, approximately 8 feet deep, and backfilled with drainage rock. All stormwater, including stormwater collected by secondary containment basins, would be directed toward the trench either by grading or with pumps and piping. New lighting would be installed at the Tahoe City Substation, in accordance with the TRPA outdoor lighting requirements, for use on an as-needed basis. Lighting would consist of one downward directed lamp with a 500-watt halogen bulb, located at the control building.

### **North Truckee Substation**

Upon completion of the North Lake Tahoe Transmission System upgrade, the northern terminus of the 650 Line would be relocated from the Truckee Substation to the North Truckee Substation after the installation of a new 120 kV bay. Work would occur within the existing facility fences.

## **REMOVAL AND RECONSTRUCTION OF THE EXISTING 625 LINE**

As part of the upgrade to 120 kV for the North Lake Tahoe Transmission System, CalPeco is proposing to “reconductor” and reroute the 625 Line with the objective that the new conductor could accommodate 120 kV, and to align more closely with the existing roadways in the area. The removal of the existing 625 Line would involve approximately 15 miles of conductor and 341 wooden poles. The new 120 kV 625 Line would use 397.5 MCM AA conductor (non-specular material) within a new 40-foot-wide permanent ROW.

## **POWER POLES**

As part of the upgrade of the 625 and 650 Lines, the existing wooden poles would be replaced by steel poles. The new steel poles would be approximately 7 to 12 feet taller than the existing wooden poles, which are between 48 and 80 feet above ground surface. On average, pole spacing would be 300 feet apart. The diameter of the existing wooden poles ranges from 13 inches to 16 inches. The diameter of the new poles would range from 15 inches to 19 inches at the base for poles buried in the ground. Poles would be buried 7 to 10 feet deep, depending on height. Guy wires may be connected to the poles in areas that need additional stability.

Self-supporting poles may be used where there would not be the option to use guy wires (e.g., where there are existing structures next to the site) or where conditions would not be suitable to adequately burying the pole base. The diameter of the self-supporting poles would vary based on whether the alternative calls for a single circuit, double circuit, if there is underbuild, and other factors. Self-supporting poles would be mounted on a concrete foundation, which would have a 3 to 6 foot diameter. These foundations typically extend above the ground surface to a height of 6 to 12 inches, but there could be site-specific circumstances where up to 2 feet of height would be required. The diameter of the self-supporting poles could be as much as 4.5 feet at the base where they are attached to the concrete foundations.

## **ELECTRIC AND MAGNETIC FIELD MANAGEMENT**

Electric and magnetic field (EMF) levels from power lines or related facilities, such as substations, are not presently regulated at the federal, state, or local level. However, the CPUC has implemented a decision (D.06-01-042) requiring utilities to incorporate “low cost” (up to approximately 4 percent of total project cost) or “no-cost” measures for managing EMF from power lines. The applicant has incorporated the following low-cost and no-cost measures to reduce EMF levels along the power line corridor and at substations.

Low-cost measures for all of the sections would include a standardized ROW width of 40-feet (which provides additional distance from the circuits to the ROW edge in some cases). Where feasible in light of other environmental constraints and permitting, all circuits would either maintain an attachment height at the power pole of 40.5-feet or have their present attachment height increased to 40.5-feet above ground level by the use of taller poles. For all sections, the phasing of the power line circuits would be arranged to maximize magnetic field reduction due to field cancellation (using reverse or unlike phasing arrangements). For lines 625 and 650, locations where these two circuits are individual single circuit configurations would be combined onto a common pole as a double circuit configuration, resulting in a more compact phase configuration and allowing the application of reverse or unlike phasing to increase magnetic field cancellation for both circuits. Finally, the loading on those circuits being upgraded from 60 kV to 120 kV operation would typically be reduced by 50 percent; which would reduce the associated magnetic field as well, since magnetic field levels are a function of loading. For the substations, high current devices associated with the project upgrade would be centrally located towards the interior of the substation and away from the property line boundaries. For more information on EMF, see Appendix D.

## **RIGHT-OF-WAY REQUIREMENTS**

### **REQUIREMENTS FOR PERMANENT RIGHTS-OF-WAY**

CalPeco currently holds easements from the USFS, USACE, the California Department of Parks and Recreation, Placer County, other public entities, and various private landowners that own properties that are crossed by the existing 650 Line, 625 Line, 132 Line, and Northstar Fold. The widths of the existing easements vary, but average approximately 30 feet. The easement for the proposed Northstar Fold would widen from approximately 40 feet to 95 feet between the westernmost pole and the Northstar Substation due to the divergence of the separate circuits. As part of project implementation, CalPeco would negotiate with the existing landowners to obtain a permanent easement of 40 feet for single-circuit options (one line on each pole) for the new 625 and 650 Lines for operation and maintenance purposes. For segments of Alternative 2 (Modified Alternative), Alternative 3 (Road Focused Alternative), and Alternative 4 (Proposed Alternative) where a double-circuit option is being considered, a permanent easement of 65 feet would be pursued. The wider easement and associated vegetation management is desired for double-circuit options because equipment damage from tree fall, wildfire, or other events could cause failure in two lines simultaneously and significantly affect service in the whole North Lake Tahoe Transmission System.

### **REQUIREMENTS FOR TEMPORARY RIGHTS-OF-WAY**

To accommodate construction, a temporary ROW width of 65 feet would be established for the new 625 Line and 650 Line (single-circuit options), the Northstar Fold, and the 132 Line. All disturbances outside of the permanent 40-foot wide easement described above would be temporary and the land would be restored to its original condition following construction, unless otherwise requested by the landowner or land management agency. For double-circuit options, all construction activity would occur within the 65-foot permanent easement.

## CONSTRUCTION ACTIVITIES

### ACCESS

The electrical line ROWs would primarily be accessed through the use of existing, paved municipal roadways and paved and dirt USFS system roads. However, additional access ways would need to be developed to facilitate access from existing roads to the power line ROWs for construction and later inspections, maintenance, and repairs. For the purpose of this assessment, all roads used to access the site are termed “access ways.”<sup>1</sup> Access ways include existing paved roads, existing dirt roads, and new dirt roads and “two-track” pathways that would be developed for the project. Where access ways would be on slopes greater than 20 percent, a wider access way would require grading, as discussed below. Exhibits 3-4A through 3-4D show existing and proposed access ways that would be used for project construction and operation. Roads on Exhibits 3-4A through 3-4D labeled as “Access – Dirt Road (No Improvement Needed)” and “Access – Paved Road” are existing dirt and paved roads that would be used to access the power line ROWs during project construction and operation and maintenance activities. These roads would be used as they currently exist and no changes or modifications are proposed. If these roads are damaged during construction, they would be restored to pre-project conditions.

The category of “Access – Dirt Road (Needs Improvement)” represents existing dirt roads that would require some modification to support their use during project construction. In most instances, the improvement or modification would consist of removing rocks and logs that may have fallen onto the road and trimming brush, branches, and other vegetation encroaching on the roadway to provide sufficient width and clearance to allow construction vehicles (e.g., cable trucks, tensioning trucks) to pass. In some instances, water bars (an interceptor dyke that is used to prevent erosion on sloping roads) and other features that might obstruct use by construction vehicles would be removed and then replaced after the construction process is complete. After completion of construction, no further work on these existing dirt roads is proposed. If the roads were damaged during construction (e.g., if deep ruts or potholes were created), they would be repaired to pre-project conditions prior to project completion.

The category of “new access ways” indicates a location where a new vehicle travel pathway would be created where one does not currently exist. A majority of the mileage of new access ways would be within the power line ROWs providing “centerline access routes” (see Table 3-2, New and Improved Access Ways Required under the Action Alternatives). The Centerline Access Routes are not shown in Exhibits 3-4A through 3-4D as they would be located immediately under, or next to, the lines showing the power line routes. The centerline access routes would be approximately 10-foot wide, and although “centerline” is in the category title, in reality the route would move back and forth within the power line ROW, going on either side of power poles, avoiding boulders and other barriers, and responding to topography. In addition, turnouts (30-foot wide) would be needed approximately every 1,000 feet for vehicle passing. The power line ROWs would initially be cleared of

<sup>1</sup> The criterion for defining a road varies by the agency with jurisdiction. Each land manager or owner may have different requirements for design, construction, maintenance, and use. TRPA Code defines “road” as a smooth or paved surface designed for travel by motor vehicles. In general, the impacts are assessed based on the coverage of the road surface. The project does not include the construction of any new paved roads. Roads on NFS lands described for this project are either temporary or permanent. Temporary Roads are built to facilitate the construction of the project. They are completely restored at the conclusion of construction and no longer used or open to vehicles. Permanent Roads would be included as part of the National Forest road system. They are classified in five levels from Maintenance Level 1 (basic custodial care, closed to vehicles) to Maintenance Level 5 (high comfort; passenger car). This project includes the use of roads that are already included in the NF (e.g., Fiberboard Freeway) and construction of new roads. New roads may be both completely new construction or may utilize portions of old legacy roadways. For this project, new roads, which include any road not previously part of the National Forest road system, are assumed for analysis to be Maintenance Level 2, to facilitate the long term operational and maintenance needs of the project. Given the different uses and definitions of the term “road,” the term “access way” is used in this document to encompass the various types of facilities that may provide vehicle access. The term “access way” is not specifically defined by any of the lead agencies, but is used generically herein to describe a route within the project area (that may or may not require widening or clearing), which is required for construction and/or operation of the project. For the purpose of this document, access ways include several categories of routes, including existing dirt roads, NFS roads, existing roads and trails that are not part of a formal designated travel system, new dirt roads constructed as part of the project, and existing and new “two-track” pathways intended for power line operations and maintenance access. Calculations of required access way mileage for each alternative are estimates based on preliminary engineering.

trees and shrubs as part of project construction. After completion of construction, the centerline access routes would be maintained in low growing vegetation for erosion control while allowing over-land vehicle travel by line trucks and inspection trucks (i.e., pickup trucks).

<b>Table 3-2 New and Improved Access Ways Required for the Action Alternatives</b>				
<b>Road Type</b>	<b>Alternative 1: PEA Alternative</b>	<b>Alternative 2: Modified Alternative</b>	<b>Alternative 3: Road Focused Alternative (Alternative 3A: Road Focused Alternative with Double Circuit Option)</b>	<b>Alternative 4: Proposed Alternative</b>
Miles of New Access Way within New Power Line ROW	5.9	5.8	1.5 (1.5)	1.5
Within Tahoe Basin	5.4	4.7	1.3 (1.3)	1.3
Outside Tahoe Basin	0.5	1.1	0.2 (0.2)	0.2
Miles of New Access Way within Existing Power Line ROW	9.4	7.3	8.2 (7.0)	8.2
Within Tahoe Basin	4.7	2.6	3.5 (2.3)	3.5
Outside Tahoe Basin	4.7	4.7	4.7 (4.7)	4.7
Miles of New Access Way outside Power Line ROW	8.9	7.7	2.1 (2.0)	2.0
Within Tahoe Basin	7.3	6.1	2.1 (2.0)	2.0
Outside Tahoe Basin	1.6	1.6	0 (0)	0
Miles of Dirt Road that Needs Improvement	1.2	1.2	0.7 (0.7)	0.7
Within Tahoe Basin	1.2	1.2	0.7 (0.7)	0.7
Outside Tahoe Basin	0	0	0 (0)	0
<b>Total</b>	<b>25.4</b>	<b>22.7</b>	<b>12.5 (11.2)</b>	<b>12.4</b>
<b>Total Within Tahoe Basin</b>	<b>18.6</b>	<b>14.6</b>	<b>7.6 (6.3)</b>	<b>7.5</b>
<b>Total Outside Tahoe Basin</b>	<b>6.8</b>	<b>8.1</b>	<b>4.9 (4.9)</b>	<b>4.9</b>

New access ways outside the power line ROW would be similar to centerline access routes in all respects except for location. They would first be developed during project construction to support construction vehicle access to the ROW. Many of the new access ways would consist of short spur roads connecting existing roadways to nearby portions of the power line ROW. Given the map scale of Exhibits 3-4A through 3-4D, these short spur roads are not visible, although they are included in the mileage calculations in Table 3-2, New and Improved Access Ways Required under the Action Alternatives. In instances where existing topography and vegetation allow vehicle access to the ROW without development of a spur road/new access way, no travel way would be developed and inspection and maintenance vehicles would drive over the existing ground surface. Trees and shrubs would be removed during construction to create an approximately 10-foot wide access way. After completion of construction, the new access way would be maintained in low growing vegetation to allow over-land vehicle travel for inspection and maintenance (Road Maintenance Level 2 per the Forest Service Handbook 7709.58, 10, 12.3).

Exhibits 3-4A through 3-4D also identify areas where grading would be required for a new access way. These are locations where the slope is estimated to be greater than 20 percent and it is assumed that some grading would be necessary to create a suitable access way (either within or outside the power line ROW) that can be traveled by maintenance and inspection vehicles. In particularly steep areas, the new access way would likely require switch back roadways to provide moderate grades and generally level cross-slopes, and would result in a noticeable change in the topography. New access ways requiring grading/earth moving due to terrain would be approximately 10 feet wide for straight sections and up to 25-feet wide at curves to safely allow the movement of construction equipment and vehicles to each site. Cut and fill slopes would disturb a wider area. Typically,

each access way requiring grading/earth moving would first be cleared of vegetation and graded by a bulldozer. A motor grader would then level the access way in accordance with the engineered specification. Erosion control best management practices (BMPs) (e.g., water bars) consistent with regulatory permit conditions, agency guidelines, and applicant proposed measures (APMs) described later in this chapter (see Section 3.7 and Table 3-8 below for a description of APMs) would also be installed to address erosion control and water quality protection concerns. Gravel would not typically be placed on these roadways. However, it may be applied where a dirt access way intersects a paved public road to minimize the potential for dirt and mud being tracked onto public roadway. Gravel may also be applied as an erosion control BMP if appropriate. The new access way would then be revegetated with low-growing vegetation and maintained as described above for other access ways, except where BMPs would not allow for revegetation.

Exhibit 3-5 shows a typical schematic cross section of three different scenarios. This graphic shows the pre-construction condition, the condition during construction, and a projection of how the access way would be maintained after vegetation growth returns.

The new access ways would not be intended for public access. Where new access ways connect to, or cross, existing roads or trails, barriers to access, such as boulders or gates would be placed at the entrance to the access way. Where temporary access ways used solely for construction connect to, or cross, existing roads or trails, barriers to access such as logs or rocks would be installed, restoration of the temporary access way would include efforts to minimize its visibility from existing roadways, and mulch or other materials may be used to further discourage motorized vehicle use. During maintenance and inspection activities, any evidence of public use would be noted and public access barriers would be adjusted, if needed.

## TRUCK TRIPS

Table 3-3, Estimated Truck Trips, provides the estimated number of truck trips associated with each project component. These would be one-way truck trips on and off the construction site and encompass all classes of trucks (e.g., material transport and delivery trucks, line tensioning trucks, cement trucks, crew trucks, cherry pickers, fuel trucks, logging trucks) except for employees driving to the job site in personal vehicles. Trip lengths would vary substantially based on the type of truck and the specific purpose (e.g., delivering materials to a staging area, moving materials from a staging area to the construction site, moving logs from the alignment to a staging or processing area, removing processed logs from the job site).

Table 3-3 Estimated Truck Trips				
Component	Approximate Number of Truck Trips (one-way)			
	Alternative 1 (PEA Alternative)	Alternative 2 (Modified Alternative)	Alternative 3 (Road Focused Alternative)	Alternative 4 (Proposed Alternative)
<b>Phase 1</b>				
Northstar Substation	55	55	55	55
650 Line Upgrade	4,825	4,050	4,970	4,905
<b>Phase 2</b>				
King Beach, Northstar, North Truckee, and Brockway Substations	880	880	880	880
650 Line Upgrade	1,260	1,260	1,325	1,260
<b>Phase 3</b>				
Tahoe City, Squaw Valley, and King Beach Substations	1,065	1,065	1,065	1,065
625 Line Upgrade	6,580	6,710	5,330	5,330
Total Estimated Vehicle Trips	14,665	14,020	13,625	12,495

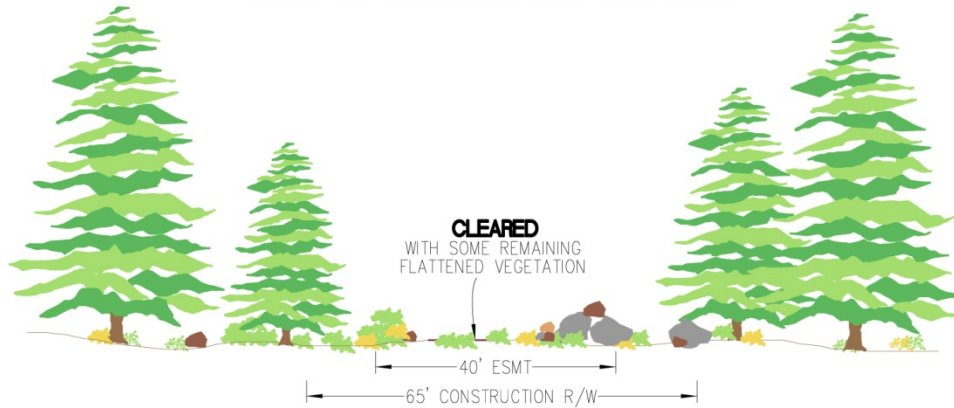


## 0-5% FLAT CROSS SLOPE

EXISTING CONDITION



PROJECT CONSTRUCTION CONDITION



FUTURE CONDITION  
(5 YEARS POST-CONSTRUCTION)

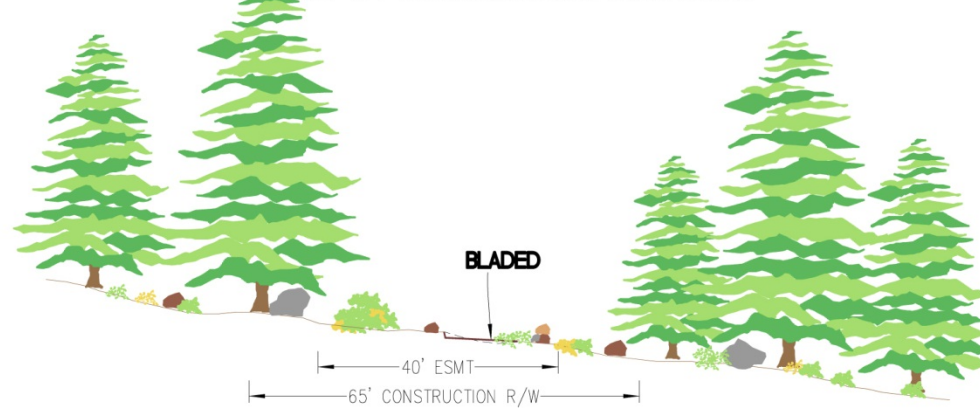


## 5-20% MODERATE CROSS SLOPE

EXISTING CONDITION



PROJECT CONSTRUCTION CONDITION



FUTURE CONDITION  
(5 YEARS POST-CONSTRUCTION)

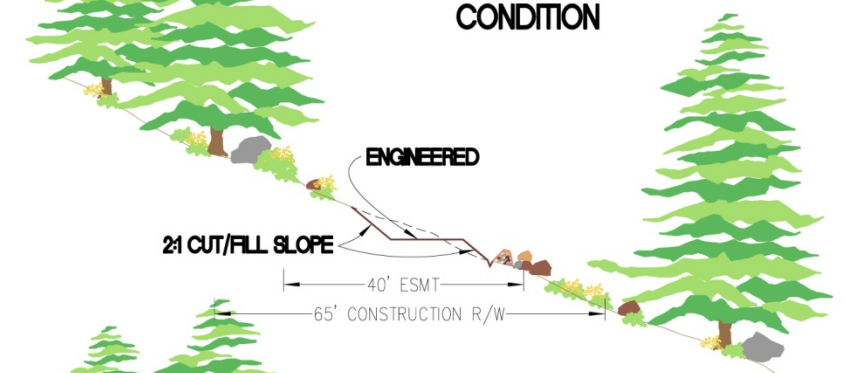


## 20%+ STEEP CROSS SLOPE

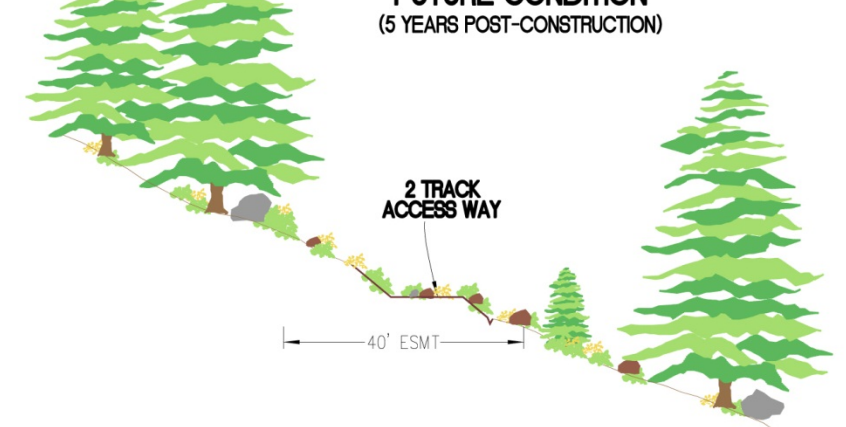
EXISTING CONDITION



PROJECT CONSTRUCTION  
CONDITION



FUTURE CONDITION  
(5 YEARS POST-CONSTRUCTION)



X10010071 01 011

Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-5

Example Access Way Cross Sections



## HELICOPTER ACCESS

Helicopters would be used to deliver and remove construction material from areas with rugged terrain, to support avoidance of sensitive biological resources, and where ground access would not safely accommodate the required construction equipment and vehicles. Helicopter landing areas identified for possible use include the Tahoe City Staging Area, the Kings Beach Staging Area, one of the Airport or the USACE Staging Areas, and one of the Northstar Parking Staging Areas, discussed below. These sites would be used for both helicopter landing and for equipment and material storage. The landing zone would be accessed using existing paved and dirt access roads. Because this landing zone would be located in a previously disturbed area, no additional grading would be required. However, some vegetation clearing may be required to provide a safe operating environment. The staging areas would be watered for dust control, as needed.

A Kaman K-Max K-1200 or similarly equipped helicopter would be used for tree removal and material delivery and removal activities in remote areas. Helicopters would typically be used during daylight hours between 6:30 a.m. and 4:00 p.m., or as allowed by local noise restrictions, to deliver and remove materials. Helicopters would not be used at night. Helicopters could also be used to remove materials and construction spoils from the ROW. The helicopters' flight paths would follow the ROW to the extent practical and would be coordinated with the Federal Aviation Administration and with permitting agencies. A "no-fly" zone may be enforced over USFS designated Protected Activity Centers (PACs) for certain wildlife species during the breeding season (typically February 15 to August 15).

## STAGING AREAS

Multiple staging areas would be required to store, stage, and distribute construction equipment and materials. A variety of potential staging areas have been included for study as part of this EIS/EIS/EIR (see Table 3-4, Staging Area Summary, below). The same staging areas are being considered for each action alternative, and all of the staging areas evaluated may not be required. The Tahoe City, Northstar Parking Lot, Northstar Golf Course and Sierra Pacific Industries (SPI) staging areas would only be used if an agreement can be reached with the landowner. Additionally, only one of the Airport 1, Airport 2, Airport 3, and USACE staging areas would be used, if an agreement can be reached with a landowner. All four are evaluated because it is unclear at this time which, if any, might ultimately become available.

**Table 3-4 Staging Area Summary**

Staging Area	Purpose	Required Improvements	Approximate Area (acres)
Tahoe City	Material and equipment storage and staging, and helicopter landing	Installation of temporary construction fencing	8.9
Fiberboard Freeway	Material and equipment storage, and staging and logging activities	Vegetation clearing, tree removal, and installation of temporary construction fencing	1.9
Former Batch Plant	Material and equipment storage, and staging and potentially logging activities	Vegetation clearing, tree removal, and installation of temporary construction fencing	0.2
Kings Beach	Material and equipment storage and staging, and helicopter landing	Vegetation clearing, minor access improvements, tree removal, and installation of temporary construction fencing	2.9
SPI	Material and equipment storage and staging	Vegetation clearing, improvement to existing dirt access road and new access way, and installation of temporary construction fencing	0.6

**Table 3-4 Staging Area Summary**

Staging Area	Purpose	Required Improvements	Approximate Area (acres)
Northstar Parking 1	Material and equipment storage and staging, and helicopter landing	Installation of temporary construction fencing	3.5
Northstar Parking 2	Material and equipment storage and staging, and helicopter landing	Installation of temporary construction fencing	7.1
Northstar Golf Course	Material and equipment storage and staging	Vegetation clearing, minor access improvements, and installation of temporary construction fencing	5.1
Airport 1	Material and equipment storage and staging, and helicopter landing	Vegetation clearing, improvements to dirt access ways, installation of temporary construction fencing	4.1
Airport 2	Material and equipment storage and staging, and helicopter landing	Vegetation clearing and installation of temporary construction fencing	8.2
Airport 3	Material and equipment storage and staging, and helicopter landing	Vegetation clearing and installation of temporary construction fencing	7.6
USACE	Material and equipment storage and staging, and helicopter landing	Improvement to existing dirt access road and installation of temporary construction fencing	1.8

The staging areas considered in this EIS/EIS/EIR are generally situated in areas with pre-existing soil disturbance; however, some sites may require minimal vegetation removal and grading. There are existing paved or dirt access roads for all of the staging areas; only access to the SPI staging area would require new, temporary disturbance. Temporary chain-link fencing would be installed around the perimeter of the staging areas and security personnel would be posted, as needed. Typically, grid power is not available at these sites and a 5.5 kilowatt diesel-powered generator would be temporarily installed to provide power on an as-needed basis. During each phase of construction, one of the staging areas would also house office trailers to support the construction crew. The staging areas currently being considered are shown in Exhibits 3-4A, 3-4B, 3-4C, and 3-4D, their characteristics are summarized in Table 3-4, Staging Area Summary, and they are described in the following subsections.

### Tahoe City

The Tahoe City Staging Area would be located approximately 1 mile north of the Tahoe City Substation and would be accessed by an existing dirt road from Jackpine Street in Tahoe City. This staging area would be used as a helicopter landing zone and for material storage and staging. The staging area has previously been partially developed; approximately half of the area of potential disturbance is conifer and chaparral habitat. The site was used as a staging area and helicopter landing zone for the recent 629 Line upgrade (line extending along SR 89 from Squaw Valley to Tahoe City). Use of the site for staging would require installation of temporary fencing, but no other improvements would be required to prepare this staging area for use.

### Fiberboard Freeway

The Fiberboard Freeway Staging Area would be located east of Segment 625-3, and would be accessed from the Fiberboard Freeway. This staging area would be used to store and stage material and equipment, and for logging activities related to the project. This approximately 2-acre area has been previously disturbed, but has some vegetative cover. The vegetation on site is dominated by mountain whitethorn (*Ceanothus cordulatus*) with scattered pines (*Pinus* sp.). Vegetation and brush would be cleared and approximately five trees would be removed to prepare this staging area for use.

### Former Batch Plant

The Former Batch Plant Staging Area would be located just off the Fiberboard Freeway (near Segment 625-4). This staging area would be used to store and stage material and equipment, and could also be used for logging



activities related to the project. This approximately 0.2-acre area has been previously disturbed and supports little natural vegetation. The primary surrounding habitat is red fir forest. Vegetation and brush would be cleared and approximately 30 trees would be removed to prepare this staging area for use.

### **Kings Beach**

The Kings Beach Staging Area would be located just north of the Kings Beach Substation on NFS land, and would be accessed by an existing dirt road located at the end of Canterbury Drive. This staging area would be used as a helicopter landing zone and for material storage and equipment staging. This site has a previously-disturbed area that measures approximately 300 feet by 300 feet and may have been used locally as a disposal site for inert refuse. Activity at this location would be focused in this previously-disturbed area (based on USFS review and authorization). The vegetation within the planned staging area mainly consists of bunch grasses and scattered Jeffrey pines (*Pinus jeffreyi*) under 10 feet in height. Minor improvements to the access road—including the removal of approximately 10 trees—would be required and a temporary fence would be installed around its perimeter.

### **SPI**

The SPI Staging Area would be located near the 625 Line east of SR 267. The staging area would be accessed off of Martis Peak Road and existing dirt access roads that would require limited improvements (e.g., trimming of vegetation encroaching on the road, minor grading). This staging area would also require approximately 0.3 acres of new disturbance for temporary access ways. Most of the staging area site has been previously disturbed.

### **Northstar Parking 1**

The Northstar Parking 1 Staging Area would be located in Northstar-at-Tahoe's Castle Peak Park and Ride lot off of Northstar Drive. This staging area would be used as a helicopter landing zone and for material storage and equipment staging. The lot and access ways are paved and no ground disturbance or vegetation removal would be required.

### **Northstar Parking 2**

The Northstar Parking 2 Staging Area would also be located in Northstar-at-Tahoe's Castle Peak Park and Ride lot, east of the Northstar Parking 1 Staging Area. This staging area would be used as a helicopter landing zone and for material storage and equipment staging. This 7-acre site and all access ways are paved and no ground disturbance or vegetation removal would be required.

### **Northstar Golf Course**

The Northstar Golf Course Staging Area would be located just north of SR 267, where the highway passes the Northstar Golf Course, and would be accessed by an existing dirt road located approximately 1.4 miles southeast of Martis Creek Road. The name, "Northstar Golf Course" was established when the PEA was prepared due to the proximity to the golf course and not land ownership. The land is owned by the Truckee Tahoe Airport District. This approximately 5 acre staging area would be used for material storage and equipment staging. The eastern and western sides of the small access road from SR 267 support different primary vegetation types. To the west of the access road, vegetation is primarily big sagebrush (*Artemisia tridentata*), low sage, lupine (*Lupinus* spp.), buckwheat (*Eriogonum* spp.), and Plumas ivesia (*Ivesia sericoleuca*). To the east of the access road, the primary vegetation types include those more typical of wet meadow habitat, including bentgrass (*Agrostis* spp.) and sedges (*Carex* spp.), with scattered low sage. To prepare this staging area, vegetation within the staging area footprint would be cleared and minor improvements would be made to the access road. A recorded cultural resources site is located next to this staging area. The boundary of the staging area would be adjusted, if needed, to avoid encroaching on this site. Signage would be placed on the perimeter fencing identifying the presence of a sensitive environmental resource and that all activities and personnel must stay within the defined boundary of the staging area.

## Airport 1

This approximately 4 acre staging area would be located on airport property in Nevada County, immediately west of Martis Creek Road. This staging area would be used as a helicopter landing zone and for material storage and equipment staging. Most of the site is currently sagebrush scrub habitat.

## Airport 2

This approximately 8 acre staging area would be partially located on airport property in the Town of Truckee. This staging area would be used as a helicopter landing zone and for material storage and equipment staging. Most of the site is currently sagebrush scrub habitat. Access to the site would be via existing paved access ways (Truckee Tahoe Airport Road and Soaring Way).

## Airport 3

The Airport 3 Staging Area would be located on airport property in Nevada County. Most of the site is currently sagebrush scrub habitat. This staging area would be used as a helicopter landing zone and for material storage and equipment staging. Access to the site would be via existing paved access ways (Truckee Tahoe Airport Road and Soaring Way).

## USACE

The USACE staging area would be located on less than 2 acres in Nevada County. The entire site has been previously disturbed. This staging area would be used as a helicopter landing zone and for material storage and equipment staging. Access to the site would be via existing paved (Martis Creek Road) and dirt access ways.

## POWER LINE CONSTRUCTION METHODS

### Stringing Site Preparation

Multiple stringing sites would be required during the removal and installation of the conductors. In general, stringing sites would be approximately 300 feet in diameter (approximately 1.6 acres) and would be spaced at distances between approximately 500 feet and 8,000 feet apart depending on the terrain and surface conditions along the ROW, as well as the placement of angle structures. On average, they would be located approximately 2,500 feet (approximately 0.5 mile) apart. Table 3-5, Estimated Number of Stringing Sites Required Under the Action Alternatives, shows the approximate number of stringing sites that would be required within and outside of the Lake Tahoe Basin. Stringing sites would require a relatively flat surface; therefore, they would need to be cleared and could need to be graded to allow for safe equipment operation. Site preparation would require heavy equipment for removing obstacles (e.g., large rocks, trees, brush). Vegetation would be removed, as necessary, to provide safe and efficient work areas. Mowing or grubbing would be the preferred method for clearing vegetation.

<b>Table 3-5 Estimated Number of Stringing Sites Required Under the Action Alternatives</b>				
<b>Road Type</b>	<b>Alternative 1: PEA Alternative</b>	<b>Alternative 2: Modified Alternative</b>	<b>Alternative 3: Road Focused Alternative (Alternative 3A: Road Focused Alternative with Double-Circuit Option)</b>	<b>Alternative 4: Proposed Alternative</b>
Number of Stringing Sites Within the Basin	44	39	45 (43)	45
Number of Stringing Sites Outside of the Basin	27	27	25 (25)	24
<b>Total</b>	<b>71</b>	<b>66</b>	<b>70 (68)</b>	<b>69</b>

## Pole Installation

### ***Excavation***

Prior to excavation, topsoil would be salvaged from the area to be excavated and from any areas that would be used for spoil storage. Topsoil would be stored adjacent to the pole, kept separate from spoil material, and respread following pole installation to facilitate revegetation of the work site. Pole installation would begin by preparing a hole by auger or track-mounted backhoe, approximately 3 feet in diameter, in which the new pole would be buried. The depth of the hole would be determined by the height of the pole. As a general rule, 10 percent of the pole height plus 2 additional feet are buried below ground. The poles would range in height from approximately 50 to 80 feet, requiring holes between 7 and 10 feet deep. Where self-supporting steel poles would be used, larger holes between 6 and 8 feet in diameter and 20 to 30 feet deep would be excavated, and concrete foundations would be poured. The permanent footprint of angle and tangent poles (poles where there is a turn in the line) would be approximately 2 square feet, while the total permanent footprint of self-supporting structures would be approximately 50.2 square feet and would displace up to 55.9 cubic yards (CY) of soil.

Blasting (outside of developed areas) or soundless chemical demolition agents (typically materials that expand in rock fissures to split larger rocks) may be required in rocky areas where normal excavation methods are unable to meet project excavation specifications. As a safety precaution, excavations would be covered, flagged, or temporarily fenced during periods of inactivity. Up to 1 CY of soil would be mounded around the base of the newly installed poles. Any remaining excavated spoil would be removed from the ROW by dump truck and stored at the staging areas. Excess spoil not used for backfilling or restoration efforts would be removed from the project site and sent to an approved landfill for reuse or disposal.

Additionally, holes for guy wire anchors would be excavated at pole sites, where required. The anchor would be a 2-foot-diameter disk attached to a steel rod with an eye at the top. The disk would be bolted perpendicular to the rod, requiring a 2-foot-diameter hole between 4 and 8 feet deep. Anchors would typically be located at a distance equal to the total pole height away from the pole's base. After installation, each anchor would be compacted and tested using a large bulldozer and winch lines, or with specific anchor testing equipment.

An additional temporary work area would be required for each anchor being installed outside of the temporary ROW. In these instances, a 15-foot by 50-foot work area, extending from the ROW to the anchor location, would be established to provide access for the track-mounted equipment. Disturbance would include vegetation removal, rock and downed tree relocation, and overland travel. To facilitate the installation of the anchor, an approximately 4-foot by 6-foot area surrounding the anchor location would be cleared of existing brush. A track-mounted backhoe would then be used to excavate a 2-foot-diameter hole, and the excavated soil stockpiled for backfilling after completion of the anchor installation. It is anticipated that all of the soil removed from the hole would be used for backfill, unless deemed unsuitable, in which case it would be hauled off site.

### ***Assembly and Erection***

Once excavation activities for the poles have begun, materials, including poles, insulators, and hardware, would be delivered to the site, assembled, and attached to the new poles to form a complete unit. Direct-buried poles would be buried in the ground, and native soil would be used to fill the holes (imported soil and in some cases concrete would be used if native material is unsuitable for compaction or could not support the pole). Concrete would be sourced from the nearest commercial batch plant. Up to 1 CY of soil would be mounded around the base of the newly installed poles. Self-supporting steel poles would be placed onto concrete foundations using cranes and would be secured using the appropriate hardware.

Helicopters may be used to deliver material to the ROW and install poles, as necessary, in areas of rough terrain or in areas otherwise inaccessible to ground crews and other construction equipment. If poles are to be installed using helicopters, they would be assembled at one of the staging areas prior to delivery to the ROW. The assembled poles would then be placed into the excavated holes using cranes. Poles to be placed by helicopters

would be assembled at the helicopter landing zone, transported, and placed in the excavated holes with assistance from ground crews.

## **Conductor Removal and Installation**

The following steps describe the construction techniques for removing and installing conductor. Exhibit 3-6 is a graphical representation of the conductor installation process. In most areas where reconductoring is proposed (i.e., old electrical line would be replaced with new line), the new conductor (i.e., electrical cable) would be of the same type as the existing conductor; specifically, 397.5 MCM AA conductor (non-specular material that reduces light reflection off the metal). An approximately 8.8-mile section of the 650 Line between Kings Beach and Martis Valley currently has aluminum core steel reinforced conductor.

### ***Conductor Removal***

The conductor would be removed by sectioning the conductor at dead-end poles. If feasible, the conductor would be spliced together in areas with multiple dead-end poles prior to removal. A heavy reel puller would be staged at stringing sites or various intersections of existing access roads, and the conductor would be pulled through the ROW to the reel puller. The conductor would be pulled under a controlled tension to keep it elevated and away from obstacles. Two crew members would walk the ROW as the conductor is being pulled and assist if the conductor snags. During the pull, the conductor forces at the poles located at each end of the pull sections would be transferred to trucks, tensioners, and pullers. The existing conductor would be placed in a hoist and attached at one end to the pole to support the down-strain load, removing load on the existing insulator. The removed conductor would be spooled onto reel trucks in 25,000 pound sections and taken along with related hardware to an existing CalPeco storage facility for reuse, or would be recycled or disposed of at an appropriate landfill. Helicopters are not anticipated to be used during conductor removal. However, if there are areas where the terrain is too rugged for truck access to a suitable pull sites, crews would access areas by foot, use all-terrain vehicles, or use a helicopter.

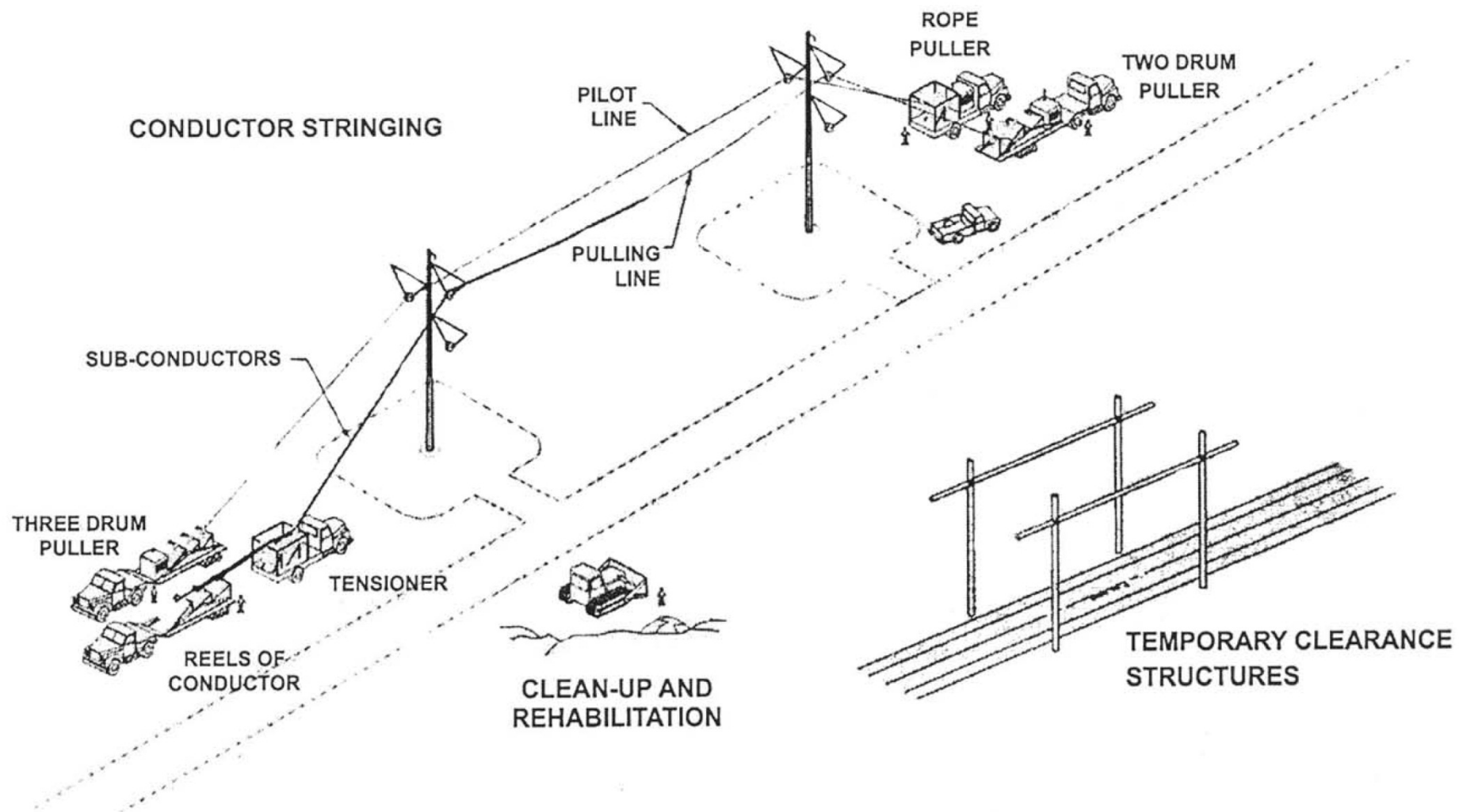
### ***Conductor Installation***

The new conductor would be attached to the sock line (i.e., a light rope or cable use to pull the conductor) and pulled back through each pole to the next conductor pulling site. After the conductor reaches the pulling site, it would be sagged and tensioned to design specifications. The 120 kV line would be installed with a minimum ground clearance of 25 feet where there are no obstructions, 30 feet where the line crosses roads, and 34 feet for any railroad crossings. The new conductor would then be clipped into the end of each insulator on each pole, any travelers (temporary rollers or pulleys hung from the poles to assist with line pulling) would be removed, and vibration dampers and other hardware would be installed.

### ***Highway and River Crossings***

At highway and river crossings, temporary clearance structures, which consist of vertical wood poles with netting strung between them to suspend any conductor that accidentally falls, would be erected prior to conductor removal and installation. An auger or backhoe would excavate the holes in which the poles for crossing structures would be installed, and a crane would lift the structure elements into place. The total temporary disturbance associated with the installation and removal of each crossing structure would be approximately 0.25 acre (100 feet by 100 feet). The temporary clearance structures would be removed after the completion of conductor stringing, and the holes would be backfilled with the excavated soils.

Any work proposed and performed within the State's right-of-way would require a Caltrans Encroachment Permit (TR-0100) prior to construction. Construction of power lines across I-80, SR 267, and SR 89 would require an encroachment permit from Caltrans for each crossing location. In conjunction with the permits, traffic control would be implemented. For I-80, rolling breaks (i.e., Highway Patrol vehicles slowing traffic behind them to provide a break in traffic ahead of them where work could be conducted) of durations sufficient for construction personnel to install pull rope and string conductors across the freeway would be used.



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Source: Received from Sierra Pacific 2010; adapted by Ascent Environmental in 2012

**Exhibit 3-6**

**Conductor Installation**

Whether rolling breaks or a traditional road closures are used, I-80 is the only crossing location where nighttime construction could be required. This option would only be used if a temporary daytime shutdown of all travel lanes as the cable is strung across the highway would not be permitted by Caltrans during daylight hours. At crossings with SR 267, SR 89, and local roadways, flaggers may temporarily hold traffic during stringing activities and reconductoring work.

The power line would span all waterways. No construction would occur in the Truckee River channel; although some pole installations and removals may be required below the ordinary high water mark. Work would only occur on the river banks and would be scheduled during low-flow conditions.

### ***Underground Distribution Duct Package and Cable Installation***

New underground distribution feeders would be installed at the Kings Beach Substation in order to maintain distribution service in the project area. Each distribution feeder would leave the Kings Beach Substation via an underground duct package and intercept the overhead distribution lines via new risers. The underground power facilities would be installed in a duct bank comprised of two 6-inch-diameter PVC conduits. Approximately nine underground splice vaults would be installed in line with the duct bank at intervals of approximately 900 feet or where the line must turn a corner.

Two to 14 days prior to trenching, CalPeco would notify other utility companies (via Underground Service Alert) and request that they locate and mark existing underground utilities along the proposed underground alignment. Exploratory excavations (potholing) would also be conducted to verify the locations of existing facilities in the field, if necessary. One short trench and three generally parallel trenches, measuring approximately 2 feet wide and 5 feet deep and separated by 5 feet, would be excavated using a backhoe. One approximately 25 foot long trench would exit the substation and head west. The remaining three trenches, approximately 980, 1,160, and 1,360 feet long, would head south. To accommodate the installation of the underground splice vaults, an approximately 14-foot long segment of trench would be expanded at splice vault locations to approximately 8-feet wide by 9-feet deep.

Upon completion of trench excavation, the underground splice vaults and 6-inch-diameter PVC conduits would be lowered into the trench. The conduits would be encased in at least 24 inches of compacted sand. The trench would then be backfilled using Type II aggregate base and compacted according to engineering specifications. The top of the duct package would be approximately 4 feet below the ground surface. Upon completion of the installation of the duct bank, the three conductors would be installed in one of the PVC conduits, leaving the other empty for future use.

The approximately 3,525 feet of trenches and underground splice vaults would result in the excavation of approximately 1,306 CY and 252 CY of material, respectively. After installation of the duct bank and underground splice vaults, approximately 1,340 CY of sand and aggregate would be used to backfill the trench. The excavated material would be incorporated into the Kings Beach Substation grading or disposed of at an appropriate facility. After the conductor has been installed, the ground surface would be restored to near pre-construction conditions, and vegetation would be replanted or the streets would be repaved, as appropriate.

Individual lanes of traffic could be closed for a period of up to one week during trench excavation, duct bank and vault installation, and pulling activities. Because Deer Street, Speckled Street, and Cutthroat Avenue are all two-lane roads, two-way traffic would continue and would be controlled using flaggers. The intersection of Deer Street and Speckled Street would be closed for up to one day during construction.

### **Pole Removal**

Following installation of the new steel poles and removal of the conductor, the hardware on the old poles would be dismantled using cranes and bucket trucks. The old poles would then be cut off at ground level and transported off site by truck for disposal at an approved facility. Crews would use existing access roads, new

spur roads, and the power line ROW to access pole work areas by truck. In areas where the terrain is too rugged for truck access, crews would use all-terrain vehicles or would hike in on foot to access the poles.

In areas with rough terrain or limited access, the poles would be cut off at ground level and transported to the nearest suitable staging area by helicopter. Poles that have not been treated may be repurposed or recycled (e.g., chipped and used at biomass energy facilities, or in landscaping or soil stabilization projects), or taken to an appropriate landfill if no other use can be found. Repurposing may include chipping for use as biomass, groundcover, or other use. Poles that have been treated, or are otherwise unacceptable for biomass or other uses, would be disposed of at an appropriate disposal site. The existing pole work areas would then be restored. In some instances, agencies have historically requested that some wood poles be left on site for a specific purpose such as raptor perching and nesting, trail alignment borders, or for erosion control in areas of steep terrain. If this occurs, CalPeco will comply with the requests.

### ***Underbuild***

The existing power line poles that would be affected by the proposed project are at heights between 48 and 80 feet above ground surface (Sierra Pacific 2010; Attachment 3-B). Sections of both of the 625 and 650 Lines include poles that accommodate the existing power line at the top of the pole, as well as existing electrical distribution lines and/or communication lines (such as cable and telephone) on the lower portion of the pole. The existing electrical distribution lines and/or communication lines that share the power poles are referred to as underbuild. Exhibit 3-7 shows the locations along the existing 625 and 650 Lines affected by the project where there is existing underbuild. Exhibit 3-7 also illustrates the different types of underbuild along these lines; the categories of underbuild are: (1) distribution underbuild only, (2) communication underbuild only, and (3) both distribution and communication underbuild. As shown in Exhibit 3-7, the existing 625 Line has a limited amount of underbuild—only two short sections of electrical distribution line, one in Tahoe City and the other just east of SR 267 at Brockway Summit. Conversely, almost the entire portion of the 650 Line affected by the project includes underbuild.

As part of all of the action alternatives, existing underbuild would be transferred to the new power poles to the extent feasible. Where the underbuild is not transferred to the new power poles, the existing poles would remain in place, the existing powerline and related equipment would be removed, and the poles topped. Generally, remaining poles that accommodate distribution only or distribution and communication underbuild would be topped to a height of about 40 feet above ground surface (+/- 5 feet) (Bengochea, pers. comm., 2012). If the remaining poles would support communication underbuild only, the remaining poles would be topped to a height of about 30 feet above ground surface (+/- 5 feet). Instances where existing poles would remain in place would typically occur in urbanized or developed areas where buildings are currently served by electrical distribution and/or communication lines. Under action alternatives where these buildings could not be adequately served by distribution or communication lines attached to new 625 or 650 Line poles (e.g., 625 or 650 Line would be moved to a new route), existing poles would remain to support the underbuild facilities. In addition, where the 650 Line parallels SR 267, north of Kings Beach to Brockway Summit, the lead agencies are in discussions with the owners of the telecommunications underbuild (e.g. AT&T) regarding relocation of the new 650 Line poles. The preferred option for the underbuild would be to co-locate these lines on the new power line poles. However, the telecommunications underbuild might remain on the existing poles, with the poles topped, as described above.

Where transfer of the underbuild to new poles would be feasible, CalPeco would be responsible for transferring the distribution underbuild. This would occur simultaneously with new power pole construction. CalPeco does not have the authority to transfer the communication lines. In accordance with the Joint Pole Agreements established between CalPeco and communication providers, owners of the communication underbuild would be responsible for transfer of these lines to the new poles generally within 60 days following construction of the new poles. Under some circumstances (such as new power poles being constructed late in the fall and weather precluding relocation to the new poles in the same season, or extended negotiations occurring with the communications underbuild

owner), the relocation of the communication underbuild could extend beyond 60 days. In these instances there would be two sets of parallel lines for a period until the communication underbuild could be relocated. After all facilities have been moved from existing poles to new poles, CalPeco lineman would remove the poles (cutting them to ground surface) (Bengochea, pers. comm., 2012).

Each of the action alternatives evaluated in this EIS/EIS/EIR involves some locations where power lines along the 625 and/or 650 Lines would be removed, but some poles would remain and be topped only. Common to all of the action alternatives, the section of the 650 Line that currently connects to the Truckee Substation would be removed. In this instance, the poles with existing distribution would remain in place and would be topped to a height of approximately 40 feet above ground surface to accommodate the remaining distribution underbuild. The extent to which alternatives would involve rerouting portions of the power lines to locations where transferring the underbuild to the newly rerouted line would not be feasible because of the need to maintain service to uses along the existing line varies by alternative and is described for each action alternative below and depicted in Exhibits 3-8, 3-9, 3-10, and 3-11.

## SUBSTATION CONSTRUCTION METHODS

To accommodate the upgrade to 120 kV, modification or reconstruction of the existing substations would be required. All of the proposed modifications would take place within CalPeco-owned parcels. Existing facilities not proposed for major changes—Squaw Valley Substation, North Truckee Substation, and the Northstar Substation—would not require extensive site grading or excavation. Construction activities at the Tahoe City Substation would require more extensive excavation and the upgrade at the Kings Beach Substation would require the import of 5,000 CY of engineered fill to build up the substation pad so it is level with the existing substation and grading.

Substation equipment would be removed by hand or by crane and recycled, reused, or disposed of at an appropriate landfill. Necessary equipment would include a crew truck, a small crane, a backhoe, a flatbed truck, and a dump truck. Foundations would be removed where they interfere with the installation, operation, or maintenance of the new equipment, and as necessary to meet land coverage requirements and in areas that are to be restored. Foundations would be dug up and larger slabs would be broken apart for loading into a dump truck to be hauled away.

An auger would be used for excavations for deep footings, rather than a backhoe or excavator, to minimize soil removal. The volume of soil that would be excavated at each substation is as follows.

- ▲ Squaw Valley Substation: Seven new footings totaling approximately 22 CY.
- ▲ North Truckee Substation: Five new footings totaling approximately 18 CY.
- ▲ Northstar Substation: One new transformer and regulator oil containment basin (transformer and regulator footings are contained inside the basin) totaling approximately 140 CY.
- ▲ Tahoe City Substation: 20 new footings, two transformer oil containment basins, and one switchgear building footing totaling approximately 400 CY.
- ▲ Kings Beach Substation: 16 new footings, two transformer oil containment basins, and one switchgear building foundation totaling approximately 285 CY.

Once excavations are complete, cranes or similar equipment would be used to install the new hardware. After installation of new equipment, it would be connected to the existing equipment and upgraded power lines. Because the substations are existing facilities (except for the Kings Beach Substation) with landscaping already in place, and all new equipment would be installed within the facilities' existing outer fence lines and at similar heights to existing equipment, additional landscaping or landscape plans are not proposed. The proposed Kings Beach Substation is within a portion of the CalPeco-owned parcel next to the existing substation and diesel generating facility, which is fenced and not visible from nearby residential areas or public travelways.





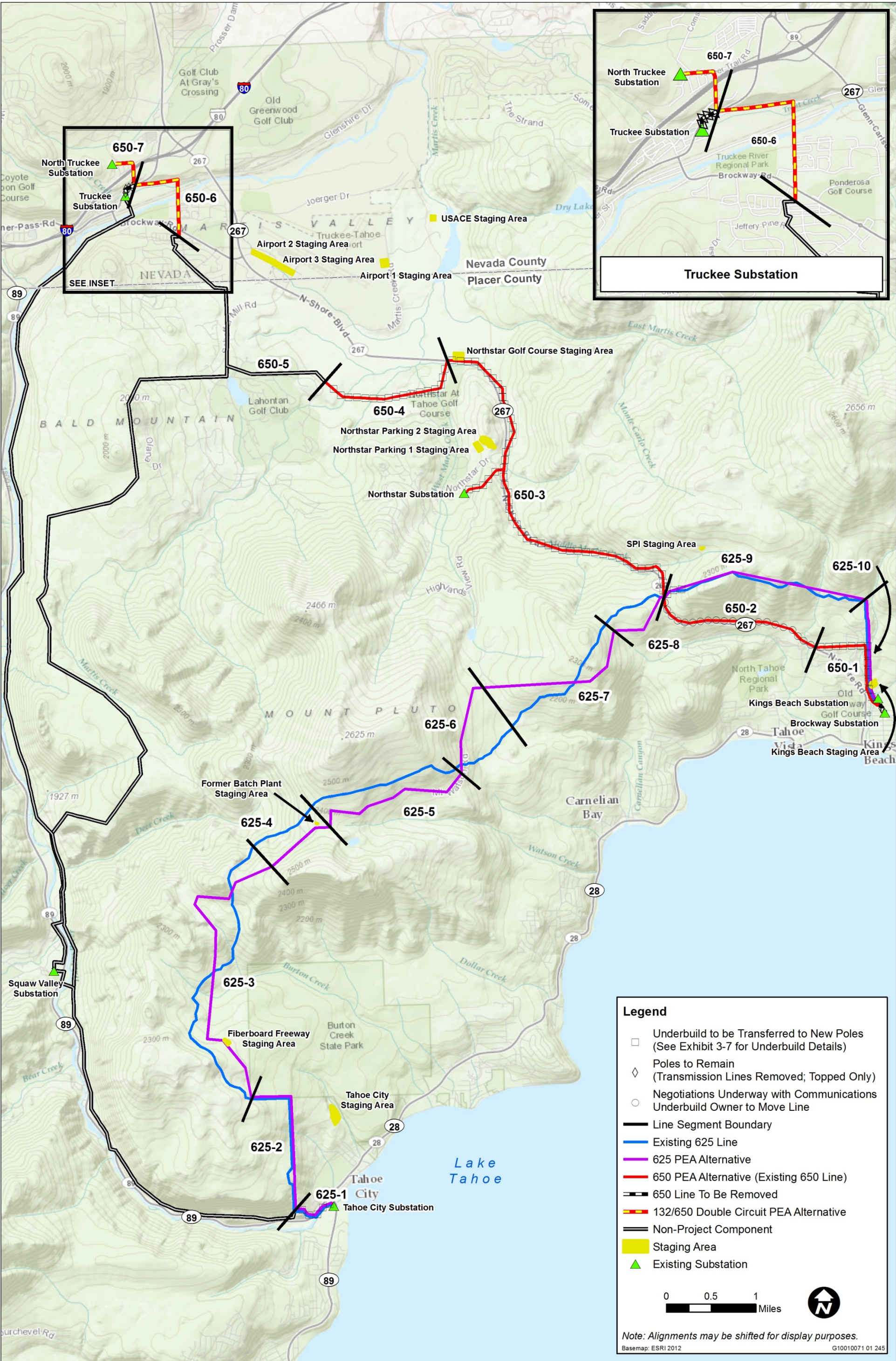
Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-7

Locations of Existing Distribution and Communication Underbuild





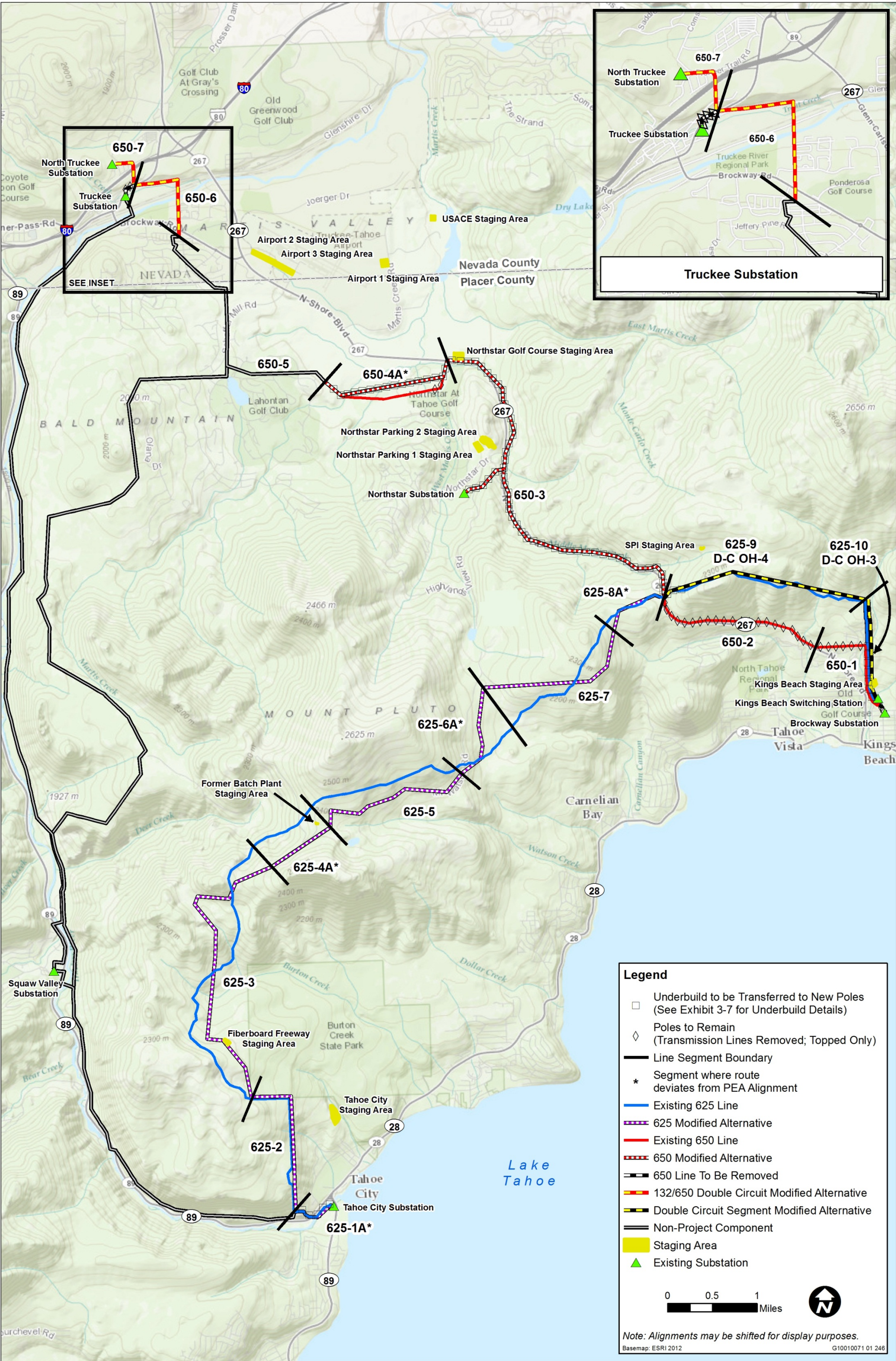


Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-8 PEA Alternative - Locations Where Existing Poles Supporting Underbuild Would Remain (Topped Only)





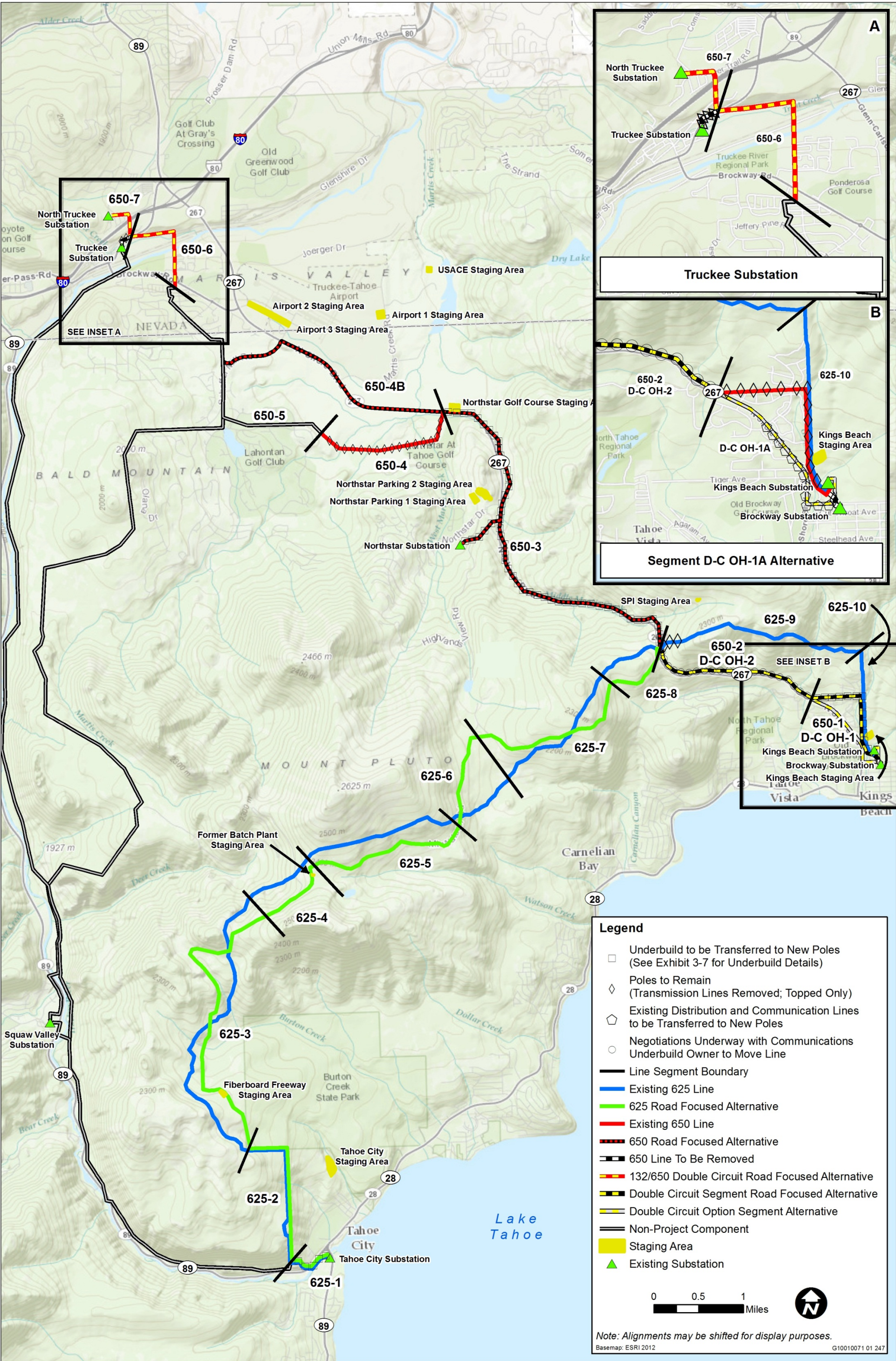


Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-9 Modified Alternative - Locations Where Existing Poles Supporting Underbuild Would Remain (Topped Only)





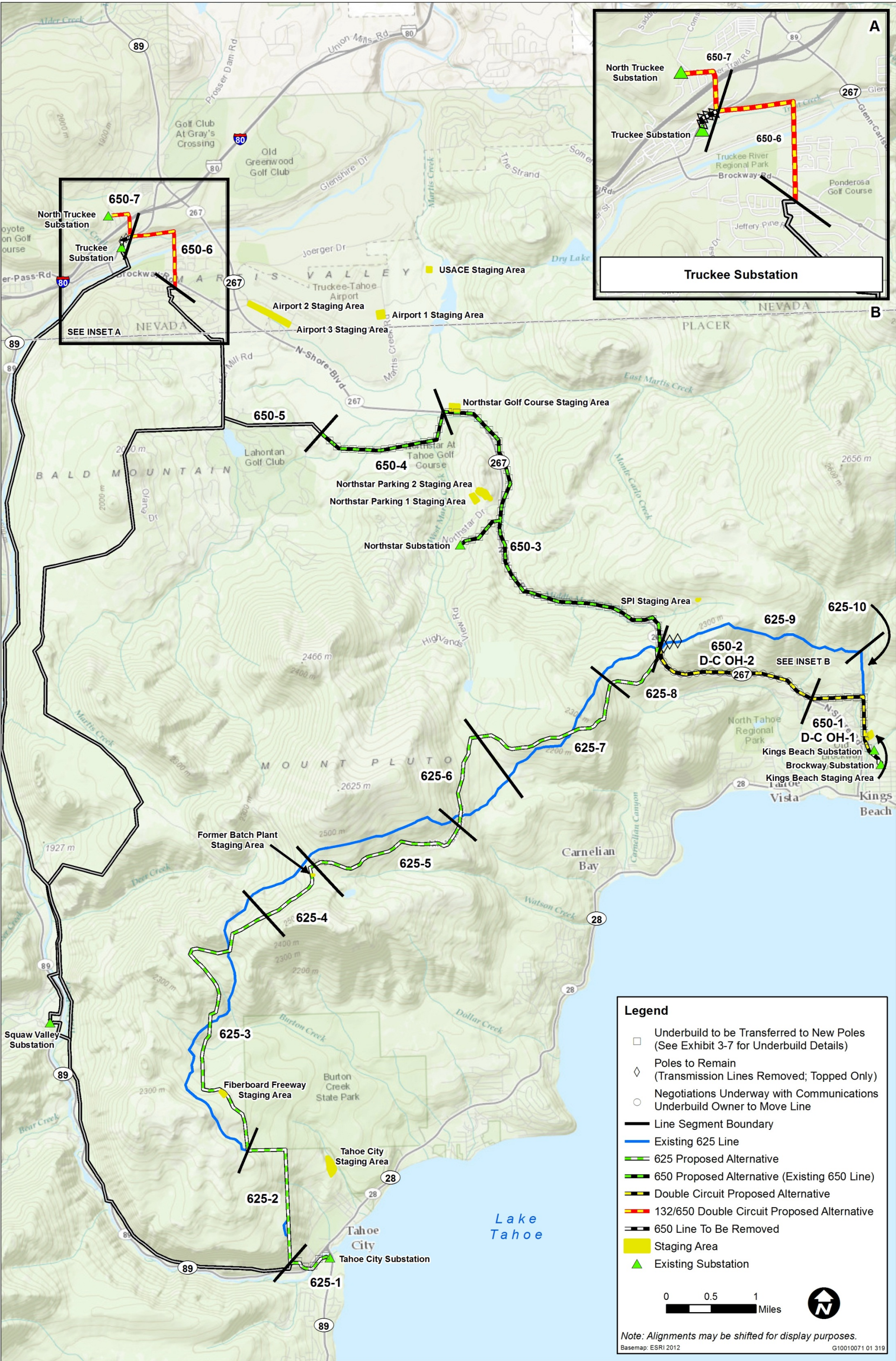


Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-10 Road Focused Alternative - Locations Where Existing Poles Supporting Underbuild Would Remain (Topped Only)







Source: Data received from TriSage 2012; Adapted by Ascent Environmental in 2012

Exhibit 3-11 Proposed Alternative - Locations Where Existing Poles Supporting Underbuild Would Remain (Topped Only)





## CONSTRUCTION WORKFORCE AND EQUIPMENT

During construction, up to 50 workers, one helicopter crew of five personnel, and five construction inspectors would be actively working at various locations along the project site. Additionally, between one and three environmental monitors would be working with the crews to monitor implementation of the project consistent with the project description and APMS (see Section 3.7 and Table 3-8 below for a description of APMs), and adherence to mitigation measures and any additional regulatory permit conditions. Environmental monitors would be independent auditors, and would report directly to the USFS, TRPA, or other agreed upon agency. In total, approximately 65 people are anticipated to be on the project at any one time during pole removal and installation. The specific number of personnel and construction equipment anticipated on site for each project component during peak construction conditions is shown in Appendix E, Construction Personnel and Equipment on Table E-1, Peak Construction Personnel. Table E-2, Typical Major Construction Equipment, also includes an estimated quantity for each equipment type and approximate duration of use for each project component. Table E-3, Access Road Construction Equipment, lists the types of equipment required to construct access roads.

## CLEAN-UP AND POST-CONSTRUCTION RESTORATION

Surplus material, equipment, and construction debris would be removed at the completion of construction activities. All man-made construction debris would be removed and recycled or disposed of at permitted landfill sites, as appropriate. Cleared vegetation would typically either be chipped and stored on the ROW for later use during restoration or disposed of off-site, depending on landowner and agency agreements and requirements. In some instances, agencies have historically requested that some wood poles be left on site for a specific purpose such as raptor perching and nesting, trail alignment borders, or for erosion control in areas of steep terrain. If this occurs, CalPeco will comply with the requests.

Areas of temporary disturbance around each pole, as well as areas used for conductor stringing and staging, would be restored to preconstruction conditions, to the extent feasible, following construction. This would include returning areas to their original contours and reseeding in accordance with USFS guidelines, USACE guidelines, and/or prearranged landowner/manager/agency agreements and requirements. CalPeco would restrict vehicle access to areas that would not remain open to the public or that were seeded until the restoration success criteria were achieved. Boulders removed during access would be redistributed over the ROW to resemble adjacent site conditions. Further restoration process details are provided in the APMs (see Section 3.7 and Table 3-8 below for a description of APMs).

## OPERATIONS AND MAINTENANCE

Operations and maintenance of the action alternatives would be the same as under existing conditions (i.e., no change in baseline conditions), which would be equivalent to Alternative 5 (No Project/No Action Alternative). The CalPeco North Lake Tahoe District Office operations personnel would patrol the lines on an annual basis. Separately from these yearly patrols, CalPeco vegetation management staff would conduct an annual hazard tree inspection, in conjunction with a California Registered Forester (more details on hazard tree identification and management are provided below in the subsection titled “Tree Removal”). As needed, CalPeco operations staff would also patrol the lines in the event of unexplained outages or significant natural incidents, such as fire, flood, or electrical storms, to inspect and repair damage. Inspections would be conducted using helicopters, all-terrain vehicles, and/or line trucks.

The typical inspections would involve a visual review of the line along a path that is roughly parallel to the centerline and along existing dirt access roads. Vegetation management activities would include tree and vegetation trimming or removal to maintain the 40-foot or 65-foot wide easement in accordance with CPUC General Order (GO) 95, Rule 35 and California Public Resources Code Section 4293. Hazard trees (i.e., dead, dying, diseased, decaying, or bug-infested trees) would also be removed as part of these vegetation management activities. In addition to the annual inspections, CalPeco operation and maintenance personnel would conduct pole-climbing inspections every five years. These inspections would include accessing each power pole site using four-wheel-drive vehicles on existing dirt access

roads. CalPeco personnel would climb each pole to inspect the integrity and condition of the hardware and insulators. Quarterly inspections would be conducted for each substation to record operation counters in the breakers, transformers, and regulators, and to address discrepancies.

The electrical line would be accessed via the centerline access routes established during construction. After completion of construction, the centerline access routes would be maintained in low growing vegetation that provides erosion control while allowing over-land vehicle travel by line trucks and inspection trucks (i.e., pickup trucks). Line trucks would access the power line ROW using the centerline access routes several times per year for routine maintenance, while inspection trucks would access the ROW one to two times per year. Vehicles would also travel on the centerline access routes as needed to perform repairs. If any of the existing access roads become impassable, CalPeco would contact the property owner prior to use or conducting any potential improvements.

### **3.3.2 ALTERNATIVE 1: PROPONENT'S ENVIRONMENTAL ASSESSMENT ALTERNATIVE**

#### **650 LINE**

Approximately 10 miles of the existing 650 Line would be rebuilt as part of this alternative, and two portions would be removed (parts of Segment 650-7 and Segment 650-1, described below).

#### **REBUILD**

##### **Segment 650-1**

From the Kings Beach Substation, Segment 650-1 of Alternative 1 (PEA Alternative) would run north, generally to the east of the residences off of Commonwealth Drive. The alignment would span over 0.5 mile to north of the Commonwealth Drive/Cantebury Lane intersection before turning west for just over 0.5 mile to SR 267. The line would then parallel the east side of SR 267.

##### **Segment 650-2**

The 650 Line would continue northwest for approximately 2 miles to cross the 625 Line near Brockway Summit. In this area, implementation of APM SCE-7 would result in the power line alignment being set back up to 200-feet farther from SR 267 than originally identified. The text of APM SCE-7 is provided in Table 3-8 below, and the resulting setback is described in detail in the description of Segment D-C OH-2 in Section 3.3.5, Alternative 4: Proposed Alternative.

##### **Segment 650-3**

The 650 Line would parallel the east side of SR 267 for approximately 4 miles from the existing and new 625 Line near Brockway Summit to south of the Truckee town limits.

##### **Segment 650-4**

The line would turn south for approximately 0.25 mile and cross SR 267. Segment 650-4 would then trend west across the Martis Creek Lake, crossing an approximately 40-acre NFS parcel managed by the USFS Tahoe National Forest, and continuing west through the Martis Creek Lake for approximately 0.5 mile to intersect with the previously upgraded portion of the 650 Line (See Exhibit 3-4A, Segment 650-5).

#### **REMOVAL**

##### **Segment 650-1**

The portion of Segment 650-1 that would be removed is located between the existing Kings Beach Substation and Brockway Substation. From the Kings Beach Substation, the segment trends in a generally southeast direction for approximately 0.2 mile, crosses Speckled Street, crosses Deer Street, and terminates at the

Brockway Substation. This segment is configured with a distribution line underbuild, which would remain in place upon completion of the project.

### **Segment 650-7**

The portion of the 650 Line proposed for removal originates at the Truckee Substation and heads north, crossing over Trout Creek Road, Donner Pass Road, and East Keiser Avenue. The segment then turns east until intersecting with the existing 132 Line. This segment is approximately 0.2 mile long and is configured with a distribution line underbuild, which would remain in place upon completion of the project.

## **132 LINE**

### **Segments 650-6 and 650-7**

The portion of the 132 Line associated with this alternative extends from the North Truckee Substation to a recently upgraded portion of the 650 Line (shown as Segment 650-5 in Exhibit 3-4A), just south of SR 267 in Truckee. This section of the 132 Line would be rebuilt to accommodate a double-circuit with the 650 Line. The distribution underbuild associated with the existing 650 Line would be transferred to the new 132/650 Line double-circuit. Throughout Segment 650-7 (between the North Truckee Substation and the portion of the 650 Line to that would be removed), a second distribution circuit would be underbuilt. This distribution line would continue to the Truckee Substation. On the 132 Line, approximately 32 poles would be replaced and the line would be reconfigured to allow a double-circuit configuration with the 650 Line and operation at 120 kV.

## **625 LINE**

Implementation of Alternative 1 (PEA Alternative) would include reconductoring and rerouting the 625 Line with the objective that the new conductor would accommodate 120 kV. Implementation would require the removal of approximately 15 miles of conductor and 341 wooden poles associated with the existing 625 Line. The new 120 kV 625 Line would consist of approximately 16 miles of new conductor within a new 40-foot-wide permanent ROW (See Exhibit 3-4A).

### **Segment 625-1**

From the Tahoe City Substation, this route would follow the alignment of the existing 625 Line, heading southwest to parallel the south side of the Truckee River before turning northwest and spanning the river and SR 89. In this area, implementation of APM SCE-8 would set the new power line further back from the Truckee River than originally identified, locating the line behind an existing line of trees on the south bank of the river, outside the river corridor such that visibility of the power line would be minimized as viewed from SR 89, the Truckee River, Truckee River Bike Trail, and the pedestrian bridge. The text of APM SCE-8 is provided in Table 3-8 below, and the resulting setback is described in detail in the description of Segment 625-1 in Section 3.3.5, Alternative 4: Proposed Alternative.

### **Segment 625-2**

The new 625 Line would turn to the north and continue through NFS lands managed by the USFS LTBMU for over 1 mile. The alignment would then turn west for approximately 0.5 mile and run adjacent to the southern border of Burton Creek State Park (with a portion of the 40-foot wide operations/maintenance/ access easement crossing over the park boundary).

### **Segments 625-3, 625-4, 625-5, 625-6, 625-7, and 625-8**

The new 625 Line alignment would generally follow the route of the Fiberboard Freeway across lands managed by the USFS LTBMU and Tahoe National Forest for approximately 10 miles.



### **Segment 625-9**

The line would turn east for approximately 2.25 miles and span SR 267 to connect to Lake Vista Road.

### **Segment 625-10**

The line would then turn south for approximately 1 mile, spanning an unpaved portion of Lake Vista Road. It would then turn southeast and span over 1,000 feet to connect to the Kings Beach Substation.

## **629 LINE**

The portion of the 629 Line from its intersection with the existing 625 Line to the Tahoe City Substation would be rebuilt with the double circuit configuration maintained. This double-circuit portion would be upgraded and reconducted as a result of this project. The angle poles would be replaced with single self-supporting steel poles (i.e., no guying). Once the remainder of the project has been completed and would be ready for operation at 120 kV, the 629 Line would have the capability to be operated in its entirety at 120 kV.

## **UNDERBUILD**

Under this alternative, nearly all of the underbuild would be transferred to new power poles (Exhibit 3-8). An exception would be the portion of the 650 Line in the Town of Truckee connecting to the Truckee Substation and between the Kings Beach Substation and Brockway Substation site, where the poles and distribution underbuild would remain (as described above). In addition, where the 650 Line parallels SR 267 in Segment 650-2, the lead agencies are in discussions with the owners of the telecommunications underbuild (e.g., AT&T) regarding relocation of the new 650 Line poles. The preferred option for the underbuild would be to co-locate these lines on the new power line poles. However, the telecommunications underbuild might remain on the existing poles, with the poles topped, as described previously. All other underbuild on the 625 and 650 Lines would be transferred to the new power poles.

### **3.3.3 ALTERNATIVE 2: MODIFIED ALTERNATIVE**

## **650 LINE**

Approximately 8 miles of the existing 650 Line would be rebuilt from Segment 650-3 through Segment 650-7. The same two portions of the existing 650 Line would be removed as in Alternative 1 (PEA Alternative). Segment 625-9 and Segment 625-10 would be built as a double circuit of the 625 and 650 Line, with an approximate 4-mile length.

### **Segment 650-1 Replaced by Segment 625-10 D-C OH-3**

Segment 650-1 would not be included in this alternative because this segment would be built as a double circuit with the 625 Line along the new alignment of the 625 Line. See the description below for Segment 625-10 D-C OH-3, below.

### **Segment 650-2 Replaced by Segment 625-9 D-C OH-4**

Segment 650-2 would not be included in this alternative because this segment would be constructed as a double circuit with the 625 Line along the new alignment of the 625 Line. See the description for Segment 625-9 D-C OH-4, below.

### **Segment 650-3**

This segment would follow the same alignment as under Alternative 1 (PEA Alternative), above.

## **Segment 650-4A**

This segment alignment deviates from Alternative 1 (PEA Alternative). The segment would be moved north to avoid sensitive cultural resources areas in the Martis Creek Lake. As with Alternative 1 (PEA Alternative), this segment would connect to the existing upgraded portion of the 650 Line.

## **Segments 650-5, 650-6 and 650-7**

These segments follow the same alignment as Alternative 1 (PEA Alternative), discussed above.

## **132 LINE**

## **Segments 650-6 and 650-7**

These segments follow the same alignment and have the same characteristics as Alternative 1 (PEA Alternative), discussed above.

## **625 LINE**

As with Alternative 1 (PEA Alternative), implementation of Alternative 2 (Modified Alternative) includes reconductoring and rerouting the 625 Line with the objective that the new conductor could accommodate 120 kV. Approximately 15 miles of conductor and 341 wooden poles would be removed. The new 120 kV 625 Line would consist of approximately 12 miles of new conductor on a single circuit (Segment 625-1A through Segment 625-8), and approximately 4 miles of new conductor on a double circuit with the 650 Line (Segment 625-9 and 625-10). The single circuit line would be within a new 40-foot-wide permanent ROW, and the double circuit line would be in a 65-foot-wide permanent ROW (See Exhibit 3-4b).

## **Segment 625-1A**

This segment would originate at the Tahoe City Substation and head southwest along the southern bank of the Truckee River. Unlike the existing alignment, this segment would be setback from the river roughly 100 feet, to the southern side of existing vegetation, and onto the 64-Acre Site. The setback would permit a straighter alignment and would minimize visibility from SR 89 and the Truckee River.

## **Segments 625-2 and 625-3**

These segments follow the same alignment as Alternative 1 (PEA Alternative), above.

## **Segment 625-4**

This segment alignment would be moved upslope of the Fiberboard Freeway as compared to Alternative 1 (PEA Alternative) to reduce visibility of the line from panoramic views seen by recreational users along the road.

## **Segment 625-5**

This segment would follow the same alignment as Alternative 1 (PEA Alternative), described above.

## **Segment 625-6A**

This segment would be oriented farther east than the Alternative 1 (PEA Alternative) alignment. The segment would follow Mt. Watson Road along the outer edge of an existing Goshawk PAC to avoid this sensitive biological resources area.

## **Segment 625-7**

This segment would follow the same alignment as Alternative 1 (PEA Alternative), described above.

### **Segment 625-8A**

This segment would deviate from the Alternative 1 (PEA Alternative) alignment, following the existing 625 Line route more closely in order to utilize some portion of the existing line where it could be at a distance from the Fiberboard Freeway (a recreational use road where no utility lines are currently located) and to place the line outside the boundary of the Lake Tahoe Basin.

### **Segment 625-9 D-C OH-4**

This segment would follow the same alignment as Alternative 1 (PEA Alternative) for Segment 625-9. However, under this alternative, this segment would be built as a double circuit with the 650 Line, eliminating Segment 650-2 from this alternative. (Note: The use of “D-C” in this and other segment titles indicates a “double circuit” option and the “OH” stands for an “overhead” line.)

### **Segment 625-10 D-C OH-3**

This segment would follow the same alignment as Alternative 1 (PEA Alternative) for Segment 625-10. However, under this alternative, this segment would be built as a double circuit with the 650 Line, eliminating Segment 650-1 from this alternative.

## **629 LINE**

The 629 line would be rebuilt in the same manner as described above for Alternative 1 (PEA Alternative).

## **UNDERBUILD**

Similar to Alternative 1 (PEA Alternative), this Modified Alternative would transfer most of the underbuild to the new power lines (Exhibit 3-9). Of the action alternatives, this alternative would have the greatest number of existing poles that would remain in place to support existing underbuild. As with the Alternative 1 (PEA Alternative), the poles and distribution underbuild along the portion of the 650 Line in the Town of Truckee connecting to the Truckee Substation and between the Kings Beach Substation and Brockway Substation site would remain with Alternative 2 (Modified Alternative). The majority of the underbuild on poles in the Martis Creek Lake would be transferred to the new poles; two or three of the existing poles in this area would be topped and remain in place creating a lateral to feed the existing pump house at the Northstar Golf Course.

The most important difference between this Modified Alternative and the other action alternatives relates to the stretch of the 650 Line within the Lake Tahoe Basin. This Modified Alternative proposes a double-circuit line extending along the existing 625 Line route between Kings Beach and the Brockway Summit, which would result in removal of the power line along SR 267. However, the existing poles along SR 267 leading up to a point just north of Stewart Way would be topped to a height of approximately 40 feet and would remain in place to continue providing electrical distribution and communication service to existing development.

## **3.3.4 ALTERNATIVE 3: ROAD FOCUSED ALTERNATIVE**

### **650 LINE**

Approximately 9 miles of the existing 650 Line would be rebuilt from Segment 650-3 through Segment 650-7. The same two portions of the existing 650 Line would be removed as in the Alternative 1 (PEA Alternative) and the Alternative 2 (Modified Alternative). Segment 650-1 and Segment 650-2 would be built as a double circuit of the 625 and 650 Lines, with a length of approximately 3 miles.

### **Segment 650-1 D-C OH-1**

This segment would follow the same alignment as under Alternative 1 (PEA Alternative) for Segment 650-1. However, under this alternative, this segment would be built as a double circuit with the 625 Line, eliminating Segment 625-10 from this alternative.

### **Segment 650-1 D-C OH-1A (Alternative 3A)**

Under Alternative 3A (Road Focused Alternative with Double Circuit Option), Segment 650-1 would deviate from the alignment of Alternative 1 (PEA Alternative) to instead follow along SR 267. The double-circuit option would realign the power line along SR 267 to Speckled Street and then along Speckled Street. With this sub-alternative (Exhibit 3-10, inset map), the existing, unrelated distribution and communication lines that run along SR 267 in Kings Beach, between Commonwealth Drive and Speckled Street and between Speckled Street and Deer Street, would be transferred to the double circuit poles to the extent feasible. It is expected that most, if not all, of these poles could be removed. Some poles may be associated with service drops or communication taps, in which case specific poles may need to remain in place. Similarly, with this option existing underbuild on the stretch of the 650 Line leading away from SR 267 and to the Kings Beach Substation would remain (Exhibit 3-9, inset map) and the poles would be topped to a height of about 40 feet above ground surface.

### **Segment 650-2 D-C OH-2**

This segment would follow the same alignment as under Alternative 1 (PEA Alternative) for Segment 650-2. However, under this alternative, this segment would be built as a double circuit with the 625 Line, eliminating Segment 625-9 from this alternative. In this area, implementation of APM SCE-7 would result in the power line alignment being set back up to 200 feet farther from SR 267 than originally identified. The text of APM SCE-7 is provided in Table 3-8, below, and the resulting setback is described in detail in the description of Segment 650-2 D-C OH-2 in Section 3.3.5, Alternative 4: Proposed Alternative.

### **Segment 650-3**

This segment would follow the same alignment as under Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), above.

### **Segments 650-4B and 650-5**

This segment would deviate from Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative). This alternative would use Alignment 650-4B along SR 267, Schaffer Mill Road, and a small segment of existing dirt road to connect to the existing, previously upgraded portion of the 650 Line (i.e., Segment 650-5). This alternative would connect to the middle of Segment 650-5 rather than at the southern terminus, making much of the southern portion of the previously upgraded line in Segment 650-5 no longer necessary. This alternative would not include removal of the southern portion of the existing upgraded line in Segment 650-5. At this time, it is assumed that the line would remain in place after project completion.

### **Segments 650-6 and 650-7**

These segments follow the same alignment and would have the same characteristics as under Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), above.

## **132 LINE**

### **Segments 650-6 and 650-7**

These segments follow the same alignment as under Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), above.

## 625 LINE

As with Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), implementation of Alternative 3 (Road Focused Alternative) includes reconductoring and rerouting the 625 Line with the objective that the new conductor could accommodate 120 kV. Implementation would require the removal of approximately 15 miles of conductor and 341 wooden poles associated with the existing 625 Line. The new 120 kV 625 Line would consist of approximately 13 miles of new conductor on a single circuit (Segment 625-1 through Segment 625-8), and approximately 3 miles of new conductor on a double circuit with the 650 Line (Segments 650-1 D-C OH-1/1A and 650-2 D-C OH-2). The single circuit line would be within a new 40-foot-wide permanent ROW, and the double circuit line would be in a 65-foot-wide permanent ROW. Project components associated with the 625 Line are intended to increase access for construction and maintenance activities (See Exhibit 3-4c).

### Segment 625-1

This segment would follow the same alignment as under Alternative 1 (PEA Alternative), above. Also, like for Alternative 1 (PEA Alternative), implementation of APM SCE-8 in this segment would set the new power line further back from the Truckee River than originally identified, locating the line behind an existing line of trees on the south bank of the river, outside the river corridor such that visibility of the power line would be minimized as viewed from SR 89, the Truckee River, Truckee River Bike Trail, and the pedestrian bridge. The text of APM SCE-8 is provided in Table 3-8, below, and the resulting setback is described in detail in the description of Segment 625-1 in Section 3.3.5, Alternative 4: Proposed Alternative.

### Segment 625-2

This segment would follow the same alignment as under Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), above.

### Segments 625-3, 625-4, 625-5, 625-6, 625-7, and 625-8

These segments would deviate from the alignments for Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative) to follow the Fiberboard Freeway along the entire route.

### Segment 625-9 Replaced by Segment 650-2 D-C OH-2

Segment 625-9 is not included in this alternative because this segment would be built as a double circuit with the 650 Line along the new alignment of the 650 Line. See the description for Segment 650-2 D-C OH-2, above.

### Segment 625-10 Replaced by Segment 650-1 D-C OH-1/1A

Segment 625-10 is not included in this alternative because this segment would be built as a double circuit with the 650 Line along the new alignment of the 650 Line. See the description for Segment 650-1 D-C OH-1/1A, above.

## 629 LINE

The 629 Line would be rebuilt in the same manner as described above for Alternative 1 (PEA Alternative).

## UNDERBUILD

Similar to Alternative 1 (PEA Alternative), this road focused alternative would transfer most of the underbuild to the new power poles (Exhibit 3-10). As with Alternative 1 (PEA Alternative), the poles and distribution underbuild along the portion of the 650 Line in the Town of Truckee connecting to the Truckee Substation, and between the Kings Beach Substation and Brockway Substation site would remain in place. In addition, where the 650 Line parallels SR 267 in Segment 650-2 D-C OH-2, the preferred option for the underbuild would be to co-locate these lines on the new power line poles. However, the telecommunications underbuild might remain on the existing poles, with the poles topped, as described previously.

One important difference between Alternative 3 (Road Focused Alternative) and Alternative 1 (PEA Alternative) involves the stretch of the 650 Line that crosses the Martis Creek Lake area. With this Road Focused Alternative, the power line would be rerouted along SR 267. In this case, the existing poles that cross Martis Creek Lake would remain in place to support the distribution and communication underbuild that exists today. Additionally, a short stretch of existing poles along the 625 Line just east of SR 267 at Brockway Summit would remain in place. In both instances, the poles would be topped to a height of approximately 40 feet above ground surface.

### **3.3.5 ALTERNATIVE 4: PROPOSED ALTERNATIVE**

#### **650 LINE**

Approximately 10 miles of the existing 650 Line would be rebuilt as part of this alternative, and two portions would be removed (i.e., Segments 650-7 and 650-1, described below) (See Exhibit 3-4d).

#### **REBUILD**

##### **Segment 650-1 D-C OH-1**

This segment would follow the same alignment as under Alternative 1 (PEA Alternative) for Segment 650-1. However, under this alternative, this segment would be built as a double circuit with the 625 Line, eliminating Segment 625-10 from this alternative.

##### **Segment 650-2 D-C OH-2**

This segment, as initially considered, would follow the same alignment as under Alternative 1 (PEA Alternative) for Segment 650-2. Under this alternative, this segment would be built as a double circuit with the 625 Line, eliminating Segment 625-9 from this alternative. To minimize the scenic effects of new double-circuit poles along SR 267 in this area, APM SCE-7 has been incorporated into the project and is considered part of Alternative 4 (Proposed Alternative). APM SCE-7, which is provided in Table 3-8 below, reads:

In cases where replacement poles for the 650 Line are adjacent to SR 267 and will be visible in unobstructed foreground public views from the roadway, poles will be carefully sited to eliminate or substantially reduce their visibility from the highway within the Tahoe Basin as compared to the existing 650 Line without causing new visual impacts from tree removal or construction of access ways that would be required to erect and maintain the line. Any revised alignment or pole placement will be reviewed and approved by applicable land owners, agencies, and utilities.

With APM SCE-7, replacement poles for the 650 Line would be sited further from SR 267 to eliminate or substantially reduce their visibility from the highway within the Lake Tahoe Basin, as compared to the existing 650 Line, without causing new visual impacts from tree removal or construction of access ways that would be required to erect and maintain the line. The setback alignment developed to implement APM SCE-7 is shown in Exhibits 3-12a and 3-12b and is considered part of Alternative 4 (Proposed Alternative).

##### **Segment 650-3**

The line would parallel the east side of SR 267 for approximately 4 miles from the existing and new 625 Line near Brockway Summit to south of the Truckee town limits.

##### **Segment 650-4**

The line would turn south for approximately 0.25 mile and cross SR 267. The Proposed Alternative would then trend west across the Martis Creek Lake area, crossing an approximately 40-acre NFS parcel managed by the USFS Tahoe National Forest, and continue west through Martis Creek Lake for approximately 0.5 mile to intersect with the previously upgraded portion of the 650 Line (Segment 650-5).

## REMOVAL

### Segment 650-1

The portion of Segment 650-1 that would be removed is located between the existing Kings Beach Substation and Brockway Substation. From the Kings Beach Substation, the segment trends in a generally southeast direction for approximately 0.2 mile, crosses Speckled Street, crosses Deer Street, and terminates at the Brockway Substation. This segment is configured with a distribution line underbuild that would remain in place upon completion of the project.

### Segment 650-7

The portion of the 650 Line proposed for removal originates at the Truckee Substation and heads north, crossing over Trout Creek Road, Donner Pass Road, and East Keiser Avenue. The segment then turns east until its intersection with the existing 132 Line. This segment is approximately 0.2 mile long and is configured with a distribution line underbuild, which would remain in place upon completion of the project.

## 132 LINE

### Segments 650-6 and 650-7

The portion of the 132 Line associated with this alternative extends from the North Truckee Substation to a recently upgraded portion of the 650 Line (shown as Segment 650-5 in Exhibit 3-4d) just south of SR 267 in Truckee. This section of the 132 Line would be rebuilt to accommodate a double-circuit with the 650 Line. The distribution underbuild associated with the existing 650 Line would be transferred to the new 132/650 Line double-circuit. A second distribution line would be underbuilt between the North Truckee Substation and the Truckee Substation. On the 132 Line, approximately 32 poles would be replaced and the line would be reconfigured to allow a double-circuit configuration with the 650 Line and operation at 120 kV.

## 625 LINE

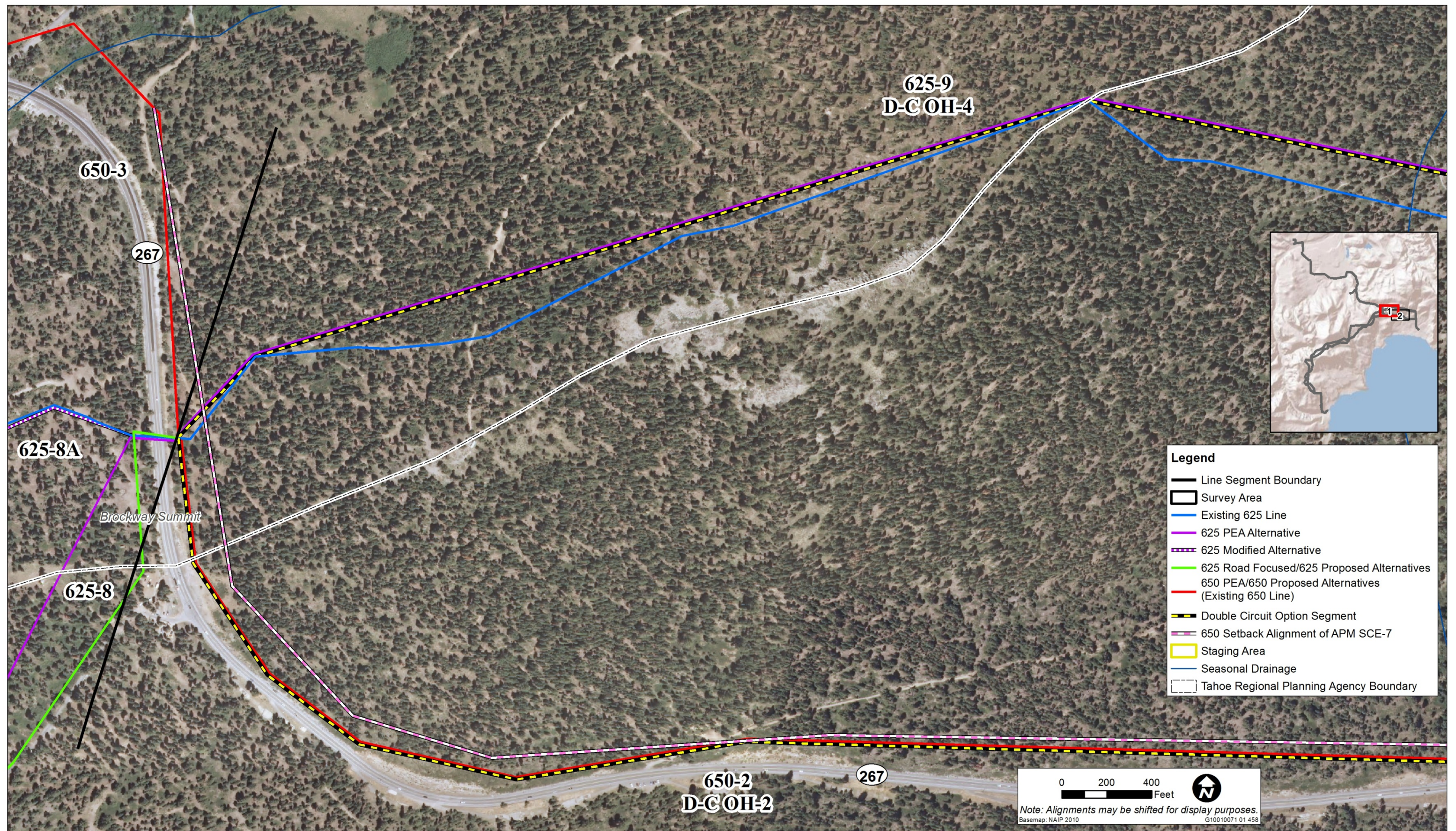
To achieve 120 kV, Alternative 4 (Proposed Alternative) would include reconductoring and rerouting the 625 line. The existing 15 miles of conductor would be replaced with approximately 13 miles of new conductor on a single circuit (Segment 625-1 through Segment 625-8), and approximately 3 miles of new conductor on a double circuit with the 650 Line (Segments 650-1 D-C OH-1/1A and 650-2 D-C OH-2) (See Exhibit 3-4d).

### Segment 625-1

This segment would follow the same alignment as Alternative 1 (PEA Alternative) and Alternative 3 (Road Focused Alternative), above. However, as discussed above for these other alternatives, implementation of APM SCE-8 in this segment would set the new power line further back from the Truckee River corridor than originally considered. The setback would place the line further into a recreation area identified as the 64-Acre Recreation site and is intended to shield views of the power line from SR 89 and the Truckee River. APM SCE-8 has been incorporated into the project and is considered part of Alternative 4 (Proposed Alternative). APM SCE-8, which is provided in Table 3-8 below, reads:

In cases where replacement poles for the 625 Line are adjacent to the Truckee River and would be visible in unobstructed foreground public views along the river or adjacent trails, poles will be carefully sited to minimize their visibility. The westernmost pole on the south bank of the Truckee River where the power line crosses the river will be placed far enough from the river so as to be substantially unseen from the pedestrian bridge. The remaining poles along the south bank of the river will be located southward, outside the river corridor and behind the trees that line the riverbank such that visibility of the power line is minimized as viewed from SR 89, the Truckee River, and the pedestrian bridge. Any revised alignment or pole placement will be reviewed and approved by applicable land owners, agencies, and utilities.





Source: Data provided by TriSage in 2013; adapted by Ascent Environmental in 2013

Exhibit 3-12A

650 Setback Alignment of APM SCE-7 - Map 1 of 2





**Legend**

- Line Segment Boundary
- Survey Area
- Existing 625 Line
- 650 PEA/650 Proposed Alternatives (Existing 650 Line)
- Double Circuit Option Segment
- 650 Setback Alignment of APM SCE-7
- Staging Area
- Seasonal Drainage
- Tahoe Regional Planning Agency Boundary

0 200 400 Feet

*Note: Alignments may be shifted for display purposes.*

Basemap: NAIP 2010 G10010071 01 459



Source: Data provided by TriSage in 2013; adapted by Ascent Environmental in 2013



Implementation of APM SCE-8 would locate the new power line behind the existing line of trees on the south bank of the Truckee River, outside the river corridor such that visibility of the power line would be minimized as viewed from SR 89, the Truckee River, Truckee River Bike Trail, and the pedestrian bridge.

### **Segment 625-2**

This segment would follow the same alignment as Alternative 1 (PEA Alternative), Alternative 2 (Modified Alternative), and Alternative 3 (Road Focused Alternative).

### **Segments 625-3, 625-4, 625-5, 625-6, 625-7, and 625-8**

These segments would follow the Fiberboard Freeway along the entire route, as described above for Alternative 3 (Road Focused Alternative).

### **Segment 625-9 Replaced by Segment 650-2 D-C OH-2**

Segment 625-9 is not included in this alternative because this segment would be built as a double circuit with the 650 Line.

### **Segment 625-10 Replaced by Segment 650-1 D-C OH-1/1A**

Segment 625-10 is not included in this alternative because this segment would be built as a double circuit with the 650 Line.

### **629 LINE**

The 629 Line would be rebuilt in the same manner as described above for Alternative 1 (PEA Alternative).

### **UNDERBUILD**

Similar to the Alternative 1 (PEA Alternative), the Proposed Alternative would transfer most of the underbuild to the new power poles (Exhibit 3-11). In Tahoe City, between the Tahoe City Substation and the Truckee River crossing, the existing underbuild would be transferred to new poles. The existing underbuild would also be transferred along much of the 650 Line between Kings Beach and Martis Valley (Segments 650-1 D-C OH-1, 650-3, and 650-4). However, where the 650 Line parallels SR 267 in Segment 650-2 D-C OH-2, the preferred option for the underbuild would be to co-locate these lines on the new power line poles. However, the telecommunications underbuild might remain on the existing poles, with the poles topped, as described previously. On the 625 Line, approximately three poles immediately east of the 650 Line would be topped to continue to support underbuild. Poles would also be topped and left in place to support underbuild between the Truckee Substation and Segment 650-7.

## **3.3.6 COMMON PROCESSES OF THE ACTION ALTERNATIVES**

### **PHASING AND SCHEDULE**

For the purposes of this environmental review, the proposed project was assumed to be constructed in three phases over five construction seasons between 2013 and 2019. Rebuild and upgrade of the 650 Line, which would include the Northstar Fold, would be completed in the first phase. This is the most critical project component, and was planned to be in service prior to the 2014 season peak in December. The second phase was initially estimated to occur in 2016 and would consist of substation upgrades. Upgrade of the 625 Line and additional modifications to the substations would occur in the third phase. After completion of this phase, the entire North Lake Tahoe Transmission System would operate at 120 kV. The third phase was initially estimated to be constructed in 2018 and 2019 to provide timing assumptions to support the EIS/EIS/EIR analysis; however, implementation would be based on peak demand and could begin sooner, or later.

Relative to timing of electrical demand and project implementation, a system analysis addendum was prepared by Z-Global in 2014 and an independent review of the addendum was provided to the lead agencies by Paul Scheurman, a licensed electrical engineer with has 45 years of experience in the field of long and short term electrical power planning field. Mr. Scheurman's project review is described in more detail in Master Response 6 and response to Comment Letter 57 in Appendix P. Information from this review is incorporated into the project phase descriptions below.

The annual construction season in the project area is generally May through November, weather permitting. The project is anticipated to result in a total of 14 months of activity spread over a five construction season period. Outside of the general construction season, limited activities could occur, including maintenance and inspection of erosion control measures and other BMPs, material deliveries to staging areas, vegetation management, and staging area maintenance.

### **PHASE 1: 650 LINE REBUILD**

Phase 1 would include rebuilding/reconductoring the 650 Line, 132/650 Line double-circuit, and upgrading the structures and conductor to 120 kV capacity from Truckee to Northstar, and Northstar to Kings Beach. Phase 1 would also involve rebuilding the existing 60 kV Northstar Tap into a line fold tying into the existing terminals, and the installation of a transfer trip on the 609 Line and the installation of capacitor banks at the Northstar Substation to address the immediate issue of low-voltage conditions. The 650 Line would continue to operate at 60 kV until the second phase is completed. This phase is the most critical for system reliability and construction of elements of this phase were initially estimated to begin as early as fall of 2013 (if all agency approvals had been achieved) with the improvements completed and in operation in 2014. Construction would begin as soon as possible after all approvals are received to accommodate current system demand of 86 MW.

### **PHASE 2: UPGRADE THE 650 LINE TERMINATIONS TO 120 kV OPERATION**

Phase 2 would include improvements to the North Truckee, Northstar, and Kings Beach substations. This phase would also include the decommissioning the Brockway Substation with re-routing of the 14.4 kV distribution feeders to the Kings Beach Substation. Construction of this phase is proposed to occur when system demand approaches 89 megawatts (MW). At an estimated load growth of 1 MW per year (the assumption used in the Z-Global system analysis addendum), it is anticipated that Phase 2 would need to be completed by 2016 and, once completed, would allow the applicant to operate the 650 Line at 120 kV.

### **PHASE 3: 625 LINE RECONDUCTOR AND RELOCATION**

Phase 3 would involve the rebuild of the 625 Line and improvements to complete the 120 kV loop. Phase 3 would include improvements to the Tahoe City, Kings Beach, and Squaw Valley substations. Completion of Phase 3 would allow for the entire loop to operate at 120 kV, including the 629 Line between Truckee and Tahoe City that has previously been upgraded with 120 kV facilities. For the purposes of the environmental analysis, the construction of this final phase was initially estimated to begin in approximately 2018, with completion and operation anticipated for the following year; however, it is acknowledged that construction could commence sooner, or later, based on need (i.e., growth of service area electricity demand). It is projected that construction of this final project phase will be necessary when system demand approaches 100 MW. Using the estimated 1 MW per year of load growth assumed in the Z-Global addendum, Phase 3 would be needed by 2027. However, if actual load growth is slower or faster, timing for reaching the 100 MW system demand would be altered.

## CONSTRUCTION HOURS

Construction hours would generally be between 7:00 a.m. and 7:00 p.m., six days per week, with adjustments made to respond to applicable local agency noise control requirements. As further described in Table 3-8, Applicant Proposed Measures (at the end of this section), NOI-4, construction activities would occur during the times established by local ordinances, with the exception of certain activities where nighttime construction would be necessary, such as delivery of substation transformers, filling of substation transformers, and pulling of the conductor across major roadways (including I-80) which must occur during off-peak hours in accordance with agency requirements. In Placer County, allowable construction hours are 6:00 a.m. to 8:00 p.m. Monday through Friday and 8:00 a.m. to 8:00 p.m. Saturday and Sunday. In the Town of Truckee, allowable construction hours are 7:00 a.m. to 9:00 p.m. Monday through Saturday and 9:00 a.m. to 6:00 p.m. on Sunday. TRPA identifies allowable construction hours as 8:00 a.m. to 6:30 p.m. seven days a week. The applicant may obtain waivers from local agencies to work outside of these limitations if necessary.

## TEMPORARY WORK AREAS

Power line construction would require the use of various temporary work areas. For example, construction at the Tahoe City Substation would require a temporary work area outside of the existing fence line on an adjacent USFS-owned parcel. Staging areas would be considered temporary work areas, as well as work areas at road crossings, both of which have been described previously. During pole installation, each angle pole would require an approximately 0.5-acre work area measuring approximately 65 feet by 335 feet and each tangent pole would require an approximately 0.25-acre work area measuring approximately 65 feet by 170 feet. Pole work areas would typically be accessed by truck using existing access roads or new spur roads and the power line ROW. In areas where the terrain is too rugged for truck access, crews would use all-terrain vehicles or would hike in by foot to access the pole sites.

An additional temporary work area may be required in instances where guy wire anchors would be installed outside of the temporary ROW. In these instances, a work area up to 15 feet wide and 50 feet long, extending from the ROW to the anchor location, would be established to provide access for the construction equipment and crew.

Some vegetation removal and grading may be required at various temporary work areas to accommodate equipment and materials, and to provide level areas to help ensure safe equipment operation. Where topsoil is present, it would be salvaged from areas to be graded whenever possible. Following construction, each temporary work site would be restored to preconstruction conditions to the extent practical, and revegetated.

## EROSION AND SEDIMENT CONTROL AND POLLUTION PREVENTION

A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented as part of the project. This plan would detail the BMPs that would be implemented to minimize erosion, reduce sediment transport, and control stormwater flow from the project area. In addition, the SWPPP would generally describe the terrain type and slope at temporary construction areas, and would address grading and slope stabilization methods, as well as construction waste disposal methods.

## DUST SUPPRESSION

Pre-construction activities would include vegetation clearing, and access and spur road construction. Water application would be required for dust abatement to work areas and unpaved access and spur roads. The volume of water required for dust abatement over the five season construction window is estimated to be 8,016,000 gallons (Sierra Pacific 2010: pp. 4.8-21). Water required for project construction would likely be obtained from the various utilities serving the region, including North Tahoe PUD, Tahoe City PUD, Northstar



CSD, and Truckee Donner PUD. Non-potable water would be obtained through permit(s), metered, and extracted from designated wells or existing hydrants in the public ROW.

## VEGETATION CLEARING

### BRUSH CLEARING

To prepare the ROW and work areas for construction activities, existing native vegetation would need to be cleared. However, this would not be the case in portions of the project area where existing poles and conductor would be removed and the ROW abandoned (e.g., portions of the existing 625 Line). In these instances, it is anticipated that conductor and pole removal can be completed using existing roads/access ways, or crews could travel by foot or all-terrain vehicle, or helicopters would be used and no vegetation removal would be needed. All treatments would be consistent with applicable APMs provided in Table 3-8. All treatment on state and privately owned lands would be in accordance with the requirements set forth in the Forest Practice Rules Chapter 4 Article 7 “Hazard Reduction” for the “North Forest District” outside of the Lake Tahoe Basin and for the “Southern Forest High Use Subdistrict” within the basin. Mowers, excavators, front-end loaders, bulldozers, and similar equipment would be used. During clearing activities, vegetation would be mowed or grubbed, leaving root systems intact wherever possible to encourage resprouting and minimize erosion. Where it would not impede construction, a post-treatment residual vegetative cover consisting of a mosaic of live brush, grasses, and forbs would be retained throughout the ROW. For ground-based construction, cleared vegetation may either be removed or chipped or masticated and spread onsite. Where sensitive resource limitations do not exist, all slash (woody debris remaining after tree removal) generated from the creation of new ROWs, staging areas, roads, and pulling sites could be removed for utilization off-site. A minor component of biomass chips may be utilized on site for soil stabilization. Brush and shrubs that must be removed would be placed at the edge of the ROW or moved to an approved staging area. During clean-up and restoration activities, salvaged brush could be respread in disturbed areas after seeding to encourage revegetation, where approved by landowner and agency agreements.

All vegetation removal would be conducted in a manner consistent with USFS and CalFire standards. Residual post-treatment surface fuel loads left onsite would be maintained at levels equal to or less than 10 tons per acre for areas outside of sensitive environment zones (SEZs). Within SEZs or PACs, residual post treatment surface fuel loads would be treated by hand work to not exceed levels of 15 tons per acre. Where chip material must be left onsite, chip depth would not exceed 4 inches and would be evenly dispersed across the forest floor. This activity would be limited to areas where activity fuels are lightly distributed across the landscape and retention activity fuels do not exceed the tons per acre standards for acceptable fuel loading. Slash depth from lop and scatter activities would not exceed 18 inches in height and would be spread on a non-contiguous manner not exceeding fuel load specifications. Where feasible, all harvest slash material located within 150 feet of a high public use and travel areas would be removed. Chip material would not be left within SEZs unless approved for erosion control. No mastication would occur in SEZs.

### TREE REMOVAL

Due to the importance of maintaining electric reliability on key system lines, regulatory standards for tree trimming and removal are greater on double circuit electrical lines than on single circuit lines. Timber removal would be required to gain access to the project footprint during construction and to maintain system reliability during operation. The estimated number of trees (over 1 inch diameter at breast height) that would require removal during construction of the action alternatives would vary between 42,500 for Alternative 3A (Road Focused Alternative with Double Circuit Option) and 55,200 for the Alternative 1 (PEA Alternative) (including hazard trees, which are discussed below) (refer to Section 4.3, Forestry Resources, for a detailed assessment of tree removal). Consistent with state-mandated vegetation management requirements for conductor clearance, the action alternatives would include:

- removal of all branches that overhang the electrical conductors;
- removal of all trees within the 40-foot ROW for the single circuit segments, and within the 65-foot ROW for the double circuit segments; and
- removal of hazard trees (e.g., severely damaged or diseased trees, or dead trees) outside the 40-foot or 65-foot ROW but within a 150-foot buffer of the project centerline that could damage the conductor if they were to fall into the ROW.

Where hazard trees are located outside of the construction ROW (or the permanent ROW during operations and maintenance in later years), additional workspace would be required to access the tree removal locations. The size of the workspace would be dependent on various factors such as the size of the tree, proximity of the tree to the power line ROW or an existing road, whether multiple hazard trees occur in the same area, the method of tree removal (e.g., helicopter, wheeled vehicle, cable), and whether an alternative treatment can be implemented such as only topping the hazard tree, or felling and leaving in place. The estimated number of hazard trees that would require removal during construction of the action alternatives would vary between 320 for Alternative 3A (Road Focused Alternative with Double Circuit Option) and 410 for the Alternative 2 (Modified Alternative). A Timberland Conversion Permit would not be required for the area between the ROW edge and the 150-foot buffer because this area would remain forested. Slash from hazard trees would be either processed at a landing if a whole tree yarding is possible or lopped and scattered on site per the California Forest Practice Rules, USFS specifications, and the TRPA Code of Ordinances. The *Hazard Tree Guidance for Forest Service Facilities and Roads in the Pacific Southwest Region* would be used as the standard for hazard tree identification.

All tree removal, hazard tree removal, and vegetation fuels management would be completed prior to the start of any on-the-ground construction activities and would be implemented consistent with applicable APMs in Table 3-8. Timber would be harvested via tractor, cable, or helicopter. Helicopters would only be used where ground-based operations would not meet the requirements of TRPA and USFS disturbance regulations. Ground-based log skidding (haul by dragging) would be focused within the designated ROW, and would use the roads and other infrastructure identified in this EIS/EIS/EIR to the maximum extent feasible.

Trees removed from the ROW and hazard trees would be felled and delimbed, skidded or cabled to the nearest access road, and loaded onto trailers for further processing (reduced in size or chipped) at the nearest staging area where log processing is established. Trees removed from areas without suitable road access could be transported by helicopter to a processing/landing area.

Chain-saws and other mechanized tree clearing equipment would be used to fell and delimb trees. Log loaders, log trailers, chippers, and chip vans would be used to transport and process cleared trees. Excess slash would be chipped or masticated and either stored on the ROW to be re-spread during restoration, or blown or loaded into trucks where it would be transported to an appropriate facility, such as a cogeneration plant (if a local plant is operational at the time of tree clearing) or landfill, or made available for an appropriate use. Wood chips could be spread out in disturbed areas for erosion control purposes to a maximum depth of 4 inches.

All tree removal activities on USFS-managed land, including the felling and skidding of trees, would be performed in accordance with a Timber Sale Contract to be established with the USFS. This contract would include details about the tree removal activities, including which trees would be removed, the price paid for the trees, and the timeframe for the forestry activities. Tree removal on USFS land would be coordinated with any ongoing fuels management projects. Logs removed from federal land would be kept separate from those removed from private lands.

When working near aquatic resources, trees will be cut by hand and felled away from such features and helicopters may be considered as an option for tree removal. Within SEZs trees will be removed by hand, by cable system, or by helicopter. Landings will not be located in Riparian Conservation Areas (RCAs) or Stream Environment Zones (SEZs). Ground based equipment may be used if conditions are determined suitable by

applicable regulatory agencies. The skidding of trees through aquatic resources will not be permitted. Trees may be left in stream channels if there is an ecological reason to do so, such as adding coarse woody debris to a stream to enhance fish habitat. Leaving coarse woody debris in perennial or intermittent stream channels and similar habitat enhancements would be coordinated with the applicable land owner/manager and regulatory agency staff, such as a USFS watershed specialist or fish biologist.

Outside of aquatic resource areas, ground based tree removal methods would typically be considered in areas with slopes less than 30 percent for activities within the Lake Tahoe Basin. In areas with steeper slopes cable systems or helicopters would be used or material would be removed by hand. Outside the Basin, there are locations where applicable regulations could allow for use of ground based equipment on slopes up to 45 percent.

All relevant Occupational Health and Safety Administration requirements would be adhered to during timber removal. Where public recreation trails are within clearance areas, temporary trail or recreation area closures would be required during active timber operations to maintain public safety. Public notice would be given prior to closure of trail heads, or any forest closure order, and signage would include specific locations of trail closures. Active onsite patrols would be employed to restrict unauthorized public access during active timber operations. It is expected that these restrictions would only be in place for one day per specific crossing location. Weekends and holidays would be avoided, and there could be restricted hours of timber harvest to accommodate recreation. Helicopter flight paths may also follow these restrictions, depending on proximity to trails or recreational use areas.

## ROAD DECOMMISSIONING

To optimize the network of forest roads, the USFS LTBMU reviews proposed projects in the context of the existing roadway network and to identify appropriate response actions (including constructing, reconstructing, or decommissioning roads). Since the action alternatives would result in the relocation of portions of the 625 Line and 650 Line, it may be appropriate to decommission USFS roads no longer necessary for access. Roads with USFS numeric designations (e.g., T16N75.2) that may be considered for decommissioning may also have segments that are on non-USFS lands. The USFS would not decommission road segments on non-USFS lands, and roads on USFS lands with easements cannot be decommissioned.

Decommissioning would likely include decompaction to a depth of 10-inches with winged rippers or a subsoiler. Once this is completed, the area would be covered with 2 to 4 inches of native mulch or wood chips. Other options for decommissioning would include blocking road access throughout the length of the decommissioned segment with rocks and logs, placing materials in clumps and at irregular spacing and burying rocks out to the widest dimension for natural appearance. Road intersections may also be disguised, and recontouring may be completed where roads intersect to prevent user-created roads from developing. Decommissioning roads would generally reduce the net increase in access way mileage and land coverage; however, since the particulars of which roads would be determined at a later date by the USFS, the potential benefits of roadway decommissioning are not included in this analysis. The roads proposed for closure under each of the action alternatives are provided in Appendix F.

## 3.4 NO ACTION ALTERNATIVE

### 3.4.1 ALTERNATIVE 5: NO ACTION/NO PROJECT ALTERNATIVE

As discussed above, in Section 2.1, NEPA, TRPA, and CEQA Requirements, NEPA and CEQA regulations require analysis of a no action alternative (CFR 1502.14[d]) and a no project alternative (California Code of Regulations Section 15126.6[e]), respectively. While NEPA requires that the no action alternative is analyzed at a comparable



level to the proposed project, CEQA only requires a discussion of reasonably foreseeable consequences of not approving the project. This document analyzes Alternative 5 (No Action/No Project Alternative), at an equal level of detail to the action alternatives. Chapter 4, Affected Environment, Environmental Consequences, and Mitigation Measures provides an analysis of the environmental impacts resulting from not approving an action alternative (i.e., implementing the No Action/No Project Alternative).

Under Alternative 5 (No Action/No Project Alternative), CalPeco would be forced to implement a load shedding plan to address events when the system reaches a stressed condition. In this scenario, lines would be operated close to or above their ratings, which would put the line conductor at high risk of annealing (excessive heating and cooling of a conductor that results in decreased tensile strength). The Kings Beach Diesel Generators would be used when needed, but because the permit for the generators limits the total number of operating hours each year, use would have to be judicious so that hours could be retained throughout the year to ensure sufficient operation during emergency scenarios throughout the year and into the heavy snow periods. To avoid risk of fire resulting from overheated lines, additional vegetation management would be conducted. This would be evaluated based on the surrounding area and density of trees, but most likely clearing outside of the ROW would be necessary. Additionally, each pole would be evaluated and any compromised poles would be replaced. All of this would be completed under the existing ROW, permits, and easement agreements with no additional environmental study. Due to the remote locations of several segments of the 625 Line, roadway access could be bladed into the areas during emergency outages. CalPeco would also seek additional wider easements to allow for a safer vegetation management to address the anticipated overstressed/overheated operation of the conductor.

## POWER LINES

Under Alternative 5 (No Project/No Action Alternative), additional inspections and maintenance may be needed along the line routes due to the stressed operation of the conductor. Damaged conductor would be replaced as necessary and could likely result in pole replacements as overheated conductor can damage multiple aspects of the poles, equipment, hardware and conductor. This would be completed in addition to the normal inspection and maintenance that would occur, as described above for the action alternatives. In addition, these lines would immediately be investigated upon project denial, and all poles that are compromised would be replaced. Additionally, a new Timber Harvest Plan would be developed to address the vegetation management requirements associated with the risk of fire during normal operations. This would include all necessary roadway access to be completed to support the on-going operation of the existing lines. Supplemental risk assessments would be conducted on approximately a 10 year rotation. All additional work would be completed under an emergency scenario to minimize, among other issues, risk of line arcing (the flow of electricity through the air from one conductor to another, often as a result of snow bending tree branches near the power line, a voltage surge due to lightening, or sagging lines as a result of line heating from heavy electrical loads or warm weather) or annealing. The USFS would be notified of the critical operation of the lines and the additional fire risk resulting from the high temperature operation. While the work would originally be completed within the existing ROW, CalPeco could seek additional ROW to allow for further tree/vegetation management to help reduce the increased risk of fire from the overheated line operation.

## SUBSTATIONS

CalPeco crews maintain a minimum quarterly inspection schedule of each substation within CalPeco's service territory. During these inspections the crews record all operation counters in the breakers, transformers, and regulators. The inspectors also record any discrepancies such as broken insulators, oil leaks, and gate or fence disrepair. Significant discrepancies are fixed immediately and less significant discrepancies are scheduled for repair on a case-by-case basis. Under Alternative 5 (No Project/No Action Alternative), these inspections would likely be stepped up to monthly or weekly to allow for monitoring of the at-risk parameters.

The substation controls are operated remotely from an Electric Systems Control Center. The substation circuit breakers can also be manually opened or closed by troublemen (CalPeco employees who patrol, repair, and restore service or report the nature of the trouble found on electrical lines, and inspect and operate automatic substation equipment) at the substations, as needed. Under Alternative 5 (No Project/No Action Alternative), the operational personnel would have the load shedding scheme available for implementation, if needed.

## **RISKS ASSOCIATED WITH NO PROJECT/NO ACTION ALTERNATIVE**

Under Alternative 5 (No Project/No Action Alternative), the north Tahoe area could experience two different operating scenarios. In the event of mild weather and no line outages, the system could perform in its current normal state. However, in the event of winter weather and a critical line outage, the North Tahoe area could experience load shedding. During such an event, the risks to the community include traffic signal outages, risk to life support equipment in residences, and loss of power to residences and business (which could result in revenue loss). Depending on the level of the load shedding, there could be impacts to sewage management facilities, water service, and fire suppression sources. Additionally, line loadings would increase annually and, as the lines are operated to their limit, the associated operating temperature of the lines would increase and pose both annealing and arching concerns. In either case, the risk of fire to forested lands is increased.

Another risk with Alternative 5 (No Project/No Action Alternative) is a potential indirect effect in response to the level of outages. The purchase of stand-alone generators for residences and businesses to provide power during extended outages could increase. This could result in the increase use of fossil fuels, and, similarly, an increase in wood stove and fireplace use.

## **3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED EVALUATION**

### **3.5.1 REGULATORY BACKGROUND**

NEPA, the TRPA Compact, and CEQA all require that alternatives be evaluated in this EIS/EIS/EIR; however, not every possible alternative or option for project implementation need be fully examined. Issues related to practicality, feasibility, and ability to meet project objectives may result in an alternative being eliminated from detailed evaluation.

In accordance with Council on Environmental Quality Regulations for Implementing NEPA Section 40 CFR 1501.2(c), the USFS must study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources as provided by Section 102(2)(E) of NEPA. Specifically, Section 1502.14 requires that an EIS examine all reasonable alternatives to the proposed action and briefly discuss the reasons for eliminating considered alternatives. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint. An alternative should also meet the purpose and need, and address one or more significant issues related to the proposed action. Since an alternative may be developed to address more than one significant issue, no specific number of alternatives is required or prescribed (36 CFR 220.5(e)).

Environmental Impact Statements are addressed in Article VII of the TRPA Compact, which requires that TRPA prepare and consider a detailed EIS before deciding to approve or carry out a project. The EIS must study, develop, and describe appropriate alternatives to the recommended courses of action for any project that involves unresolved conflicts concerning alternative use of available resources. Guidance is not provided regarding a specific number of alternatives to consider or the evaluation of the reasonableness or feasibility of alternatives.

CEQA Guidelines (Section 15126.6 (a-c)) state that an EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. Any alternatives that were considered by the lead agencies, but were rejected during the planning or scoping process should also be identified and the reasons underlying the lead agency's determination should be briefly explained.

### 3.5.2 ALTERNATIVES SCREENING METHODOLOGY

Numerous alternative methods to implementing the proposed project (including specific input on project activities in a particular area) were suggested during the scoping period. Other alternatives were presented by Sierra Pacific Power Company (the original applicant) in its PEA, or considered by the EIR/EIS/EIS team (i.e., lead agencies, applicant, and consultants) as the draft document was being prepared. Many of these suggestions, alternatives, or elements of alternatives (collectively referred to as "alternatives" in the remainder of this section), are incorporated into the action alternatives described above. However, several alternatives were determined to be unsuitable for detailed evaluation in this EIS/EIS/EIR. To assess the proper approach for addressing each alternative, the description of each alternative was clarified to allow a meaningful comparative analysis, then they were evaluated using each Lead Agency's criteria, and a finding of suitability for full analysis in the EIS/EIS/EIR was made. Alternatives that did not meet the selection criteria were removed from further analysis.

- ▲ To comply with NEPA/CEQA requirements, each alternative that has been suggested or developed for this project has been evaluated against the following three criteria:
  - /// Does the alternative meet the project purpose and need/objectives?
  - /// Is the alternative feasible (i.e., legal, regulatory, technical)?
  - /// Does the alternative avoid or substantially lessen any significant effects of the proposed project (including consideration of whether the alternative itself could create significant effects potentially greater than those of the proposed project)?

These criteria are described in more detail below. In total, the alternatives screening process culminated in the identification and screening of 16 potential alternatives for the proposed project, the four action alternatives described above, and 12 additional alternatives considered but eliminated from detailed evaluation (described below). These alternatives range from a different substation location and power line alignments and designs, to various expansions of existing system options, as well as "non-wires alternatives." "Non-wires alternatives" include methods of meeting project objectives that do not require major electrical lines (e.g., development of renewable energy supplies, conservation and demand side management to reduce electrical usage and prevent the need for facility upgrades).

### CONSISTENCY WITH PROJECT PURPOSE AND NEED/OBJECTIVES

For purposes of NEPA, an alternative should meet the purpose and need and address one or more significant issues related to the proposed action. State CEQA Guidelines require the consideration of alternatives capable of eliminating or reducing significant environmental effects while feasibly attaining most of the project objectives, although an alternative may "impede to some degree the attainment of project objectives" (Section 15126.6 (a) and (b)). Therefore, it is not required that each alternative meet all of the applicant's objectives.

The purpose and need/objectives of the project used for the alternatives screening are the same as those listed in Chapter 2, Purpose and Need:



- ▲ provide normal capacity for current and projected loads,
- ▲ provide reliable capacity to assure adequate service to all customers during single-contingency outages,
- ▲ reduce dependence on the Kings Beach Diesel Generation Station,
- ▲ reduce the risk of fire hazards and outage durations associated with wooden poles and encroaching vegetation, and
- ▲ provide more reliable access to the 625 Line for operation and maintenance activities.

## FEASIBILITY

Under NEPA, reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant. The CEQA Guidelines (Section 15364) define feasibility as being “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.” In addition, CEQA requires that the Lead Agency consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and applicant’s control over alternative sites in determining the range of alternatives to be evaluated (State CEQA Guidelines, Section 15126.6(f)(1)).

For the screening analysis, the legal, technical, and regulatory feasibility of potential alternatives was assessed. An alternative was excluded from detailed analysis if a determination was made that there was anything about the alternative that would be infeasible on technical, legal, or regulatory grounds. For this analysis, these feasibility criteria were applied as follows.

- ▲ **Legal Feasibility:** Does the alternative have the potential to affect lands that have legal protections that may prohibit or substantially limit the feasibility of permitting the project?
- ▲ **Regulatory Feasibility:** Does the alternative have the potential to affect lands that have regulatory restrictions that may substantially limit the feasibility of, or permitting of, the project within a reasonable period of time?
- ▲ **Technical Feasibility:** Is the alternative feasible from a technological perspective, considering available technology; the construction, operation, and maintenance or spacing requirements of multiple facilities using common ROW; and the sensitivity to common failure mechanisms (e.g., weather, tree fall) and ability to repair failures?

While the screening analysis does include cost information where available, the analysis does not focus on relative economic factors or costs of the alternatives (as long as they are found to be economically feasible) since the State CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may “impede to some degree the attainment of project objectives or would be more costly” (State CEQA Guidelines Section 15126.6(b)).

## POTENTIAL TO ELIMINATE SIGNIFICANT ENVIRONMENTAL EFFECTS

Under NEPA, an alternative should address one or more significant issues related to the proposed action. Under CEQA, an alternative should have the potential to “avoid or substantially lessen any of the significant effects of the project” to be fully considered in an EIR (State CEQA Guidelines, Section 15126.6(a)). If an alternative was identified that clearly would not provide potential overall environmental advantage as compared to the action alternatives receiving detailed review, it was eliminated from further consideration. At the screening stage, it is neither possible, nor legally required, that impacts of each potential project option be compared against the action alternatives with absolute certainty, nor is it necessary to quantify impacts for every alternative put

through the screening process. However, it is possible to identify elements of an alternative that are likely to be the sources of impact and to relate them, to the extent possible, to similar impacts from the action alternatives.

The following environmental issue areas where significant effects could occur as part of the action alternatives were used to determine whether an alternative met NEPA/CEQA guidance on avoiding and lessening significant environmental effects:

- ▲ Scenic Resources;
- ▲ Hydrology and Water Quality;
- ▲ Biological Resources;
- ▲ Heritage, Cultural, and Paleontological Resources;
- ▲ Hazards and Hazardous Materials;
- ▲ Air Quality; and
- ▲ Noise.

### 3.5.3 RESULTS OF SCREENING

Table 3-6 provides a composite list of the alternatives considered but eliminated from detailed evaluation, and the results of the screening analysis with respect to the criteria findings for consistency with project objectives, feasibility, and environmental effectiveness. A description of each of these alternatives is then provided with a discussion of the screening analysis and results.

Table 3-6 Summary of Screening Analysis for Alternatives Considered but Eliminated from Detailed Evaluation						
Alternative Title	Consistent with Project Purpose and Needs/Objectives	Feasibility			Potential to Eliminate Significant Environmental Effects	Alternative Eliminated from Detailed Evaluation
		Legal	Regulatory	Technical		
Rebuild Only the 650 Line at 120 kV	No	Yes	Yes	Yes	No	Yes
Operate the 629 Line at 120 kV	No	Yes	Yes	Yes	Yes	Yes
Rebuild the 625 Line along its Existing Route	No	Yes	Yes	Yes	No	Yes
Reconductoring the 609 Line from Truckee to Squaw Valley	No	Yes	Yes	Yes	No	Yes
Completing a Closed 120 kV Loop to the Incline Substation from Kings Beach Substation	No	Yes	Yes	Yes	No	Yes
Utilizing Distribution Backup for Single-contingency Transmission Outages on the North Lake Tahoe Transmission System	No	Yes	Yes	Yes	Yes	Yes
Utilizing Additional Diesel Generation to Provide Reliable Capacity for Transmission Outages	No	Yes	Yes	Yes	No	Yes

**Table 3-6 Summary of Screening Analysis for Alternatives  
Considered but Eliminated from Detailed Evaluation**

Alternative Title	Consistent with Project Purpose and Needs/Objectives	Feasibility			Potential to Eliminate Significant Environmental Effects	Alternative Eliminated from Detailed Evaluation
		Legal	Regulatory	Technical		
Submarine Cable Alternative	No	Yes	Yes	Yes	Potential to reduce some significant effects while generating new or more severe significant effects	Yes
Installing Power Lines Underground	Yes	Yes	Yes	Yes	No	Yes
Non-Wires Alternative – Demand Management Conservation	No	Yes	Yes	No	Yes	Yes
Utilizing Reactive Capacitance to Delay the Need for the Project	No	Yes	Yes	No	No	Yes
Relocate the Tahoe City Substation	No	Yes	Yes	Yes	No	Yes

## ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

### Rebuild Only the 650 Line at 120 kV

#### **Description**

Rebuild only the 650 Line at a 120 kV capacity with new, larger conductor to be operated at 60 kV with the ability to use the increased capacity of the larger conductor to operate the line at 120 kV when more incremental capacity would be needed. The upgraded line would follow the route of the existing 650 Line, putting it in the same alignment as Alternative 1 (PEA Alternative). No improvements would be made to the 625 Line. The design, construction, operation, and maintenance activities described above under the 650 Line portion of Alternative 1 (PEA Alternative) would be the same under this alternative.

#### **Rationale for Elimination**

This alternative would be feasible from a technical, legal, and regulatory perspective. The overall environmental effects would be similar to Alternative 1 (PEA Alternative). However, neither the project objective of providing reliable capacity to assure adequate service to all customers during single-contingency outages nor the objective of reducing dependence on the Kings Beach Generation Station would be met.

Based on system planning analysis, this alternative could provide a reliable capacity of 91 MVA, including use of the generators at Kings Beach Diesel Generation Station, until about 2019 when coincident peak is projected to exceed 91 MVA. The reliable system capacity is determined with one leg of the system out of service. The loss of the 132 Line would result in the 650 Line being overloaded and would require load shedding (i.e., rolling blackouts) even with the Kings Beach generators in operation. To avoid this situation, the remainder of the project, as proposed in the action alternatives, would be required to be in service in approximately 2019. Therefore, from an environmental perspective, the spatial effects would be similar to the action alternatives but temporally they would occur over a longer period of time. However, this alternative would not provide adequate long term reliable capacity system-wide and was therefore dismissed from further evaluation because it would not meet the objectives of the project.



## Operate the 629 Line at 120 kV

### **Description**

The 629 Line, which generally runs parallel to SR 89, comprises the southwest side of the North Lake Tahoe Transmission System and was previously upgraded with large conductor to accommodate 120 kV but currently operates at 60kV. Under this alternative, the 629 Line would be operated at 120 kV to utilize the increased current capacity; however, the 625 Line and 650 Line would not be upgraded.

### **Rationale for Elimination**

This alternative would be feasible from a technical, legal, and regulatory perspective. Under this alternative, the overall environmental effects would be less than the action alternatives because the 625 Line and 650 Line would not be upgraded. System planning analysis indicates that operating the 629 Line at 120 kV would provide a reliable capacity of 85 MVA, which would not meet current peak electrical needs. Without the ability of switching the full capacity of the 629 Line to the 625 and 650 Lines, this alternative would essentially provide an island of increased reliability in the system, and would not improve single contingency reliability.

A peak electrical demand situation occurred on December 30, 2012 in which the contingency that was of concern was the loss of the 629 Line. In the event of the 629 Line being lost during this peaking period, a critical situation would have occurred, potentially requiring load shedding. A loss of the 629 Line, on peak, could cause the current 650 Line to overload, and result in a situation where the applicant would have had to run the Kings Beach diesel generators as well as shed load. Even with implementation of this alternative, the loss of the 629 Line during peak loads (such as those experienced December 30, 2012) would still result in load shedding, even with Kings Beach diesel generators in operation and the 650 Line operating at 120 kV. Therefore, neither the project objective of providing reliable capacity to assure adequate service to all customers during single-contingency outages, nor the objective of reducing dependence on the Kings Beach Generation Station would be met. This alternative was, therefore, dismissed from further evaluation because it would not meet the objectives of the project.

## Rebuild the 625 Line along its Existing Route

### **Description**

The existing 625 Line was originally routed in the early 1970s in a remote location which provided visual screening by intervening vegetation and topography. The line has many angle points and is difficult to access for inspection, maintenance, and repairs. The remoteness of the line and high numbers of angle points (which have a higher probability for failure) has proven problematic in terms of reliability (i.e., when the line fails, which is typically during weather events, it is difficult to access for emergency repairs).

Under this alternative the 625 Line would be rebuilt, typically following the existing alignment, but would deviate in some locations to allow straightening of the line to reduce the number of angle points. Where the new alignment would deviate from the existing ROW, tree removal to accommodate a 40 foot ROW and other construction related activities associated with installation of a new power line alignment would be required. In addition, where the existing ROW would continue to be used, widening of the 20 foot vegetation management corridor to 40-feet would be required to meet CPUC regulatory requirements under GO 95 for a 120 kV line.

Based on available USGS topographic maps and use of as many existing roadways as possible, the applicant designed a conceptual access way plan for this alternative which indicated that construction of approximately 18 miles of new access ways would be required. However, the extreme terrain would limit access in many places; so that overland vehicle access to the entire line would not be attained, even with the new access way system. Given the rough terrain, the installation of the new 625 Line (once the logging, vegetation removal, and access way building operations were complete) would be slower than normal, likely requiring a two season construction window.

Other than the distinctions described above, construction, design (except the modification to the original alignment and access ways), operation and maintenance activities described above under the 625 Line portion of Alternative 4 (Proposed Alternative) would generally be the same under this alternative.

### ***Rationale for Elimination***

This alternative would be feasible from a technical, legal, and regulatory perspective. This alternative would not meet the project objective of providing reliable overland vehicle access to the 625 Line for inspection, maintenance, and repairs because, as discussed above, the extreme terrain would limit overland vehicle access in many places even with the new access way system. Since full access would not be achievable, the reliability would not be addressed and, therefore, this project objective would not be met.

Moreover, this alternative would not minimize environmental effects, but would cause impacts greater than those identified for the action alternatives primarily due to the need for more new access ways than the action alternatives. Specifically, this alternative would require approximately 18 miles of new access ways where the action alternatives would require between 4 and 16 miles of new access ways. Accordingly, because this alternative would not meet the project objectives and would not reduce environmental effects, it was eliminated from further review and consideration.

## **Reconductoring the 609 Line from Truckee to Squaw Valley**

### ***Description***

This alternative would include reconductoring the 609 Line, which parallels the 132 Line from Truckee to Squaw Valley and comprises the northwest side of the North Lake Tahoe Transmission System, with larger conductors. While reconductoring the 609 Line would provide benefit to the overall system in the event of an outage on the 132 Line, it would not provide a benefit to the overall system in the event of an outage on the 629 Line because it would not provide a strong, reliable electricity source on the eastern side of the North Lake Tahoe Transmission System which is also needed to increase the reliability of the overall system. Accordingly, upgrading the 625 and 650 Lines as described above under the action alternatives would still be required.

### ***Rationale for Elimination***

This alternative would be feasible from a technical, legal, and regulatory perspective. However, this alternative would result in greater environmental effects than the action alternatives and would not meet the project objectives and goals. It would include the additional construction activity of reconductoring the 609 Line. Increasing capacity of the 609 Line conductor would also require modification (i.e., installation of relay switches) within the fence lines of the substations associated with this line. Given that the construction effects associated with reconductoring the 609 Line would be greater than those associated with the action alternatives alone, this alternative was eliminated from further review and consideration. Additionally, this project does not address the reliability concern nor does it allow for better line access.

## **Completing a Closed 120 kV Loop to the Incline Substation from Kings Beach Substation**

### ***Description***

This alternative would include: (1) installation of a new 120 kV line to connect the Incline Substation (northeast of the project area/transmission system shown in Exhibit 3-2) to the Kings Beach Substation; (2) upgrade of the 650 Line to 120 kV, as described above for the action alternatives; and (3) continued operation of the 625 Line within its existing alignment at 60 kV with construction of approximately 18 miles of new access ways to address access issues as described above under the alternative considered but rejected entitled "Rebuild the 625 Line along its Existing Route." This alternative would require the relocation of the California Substation phase shifter (in Truckee) to the Pacific Gas and Electric Company side of the North Truckee Substation, which would require modification and expansion to the California and North Truckee substations, respectively. Additionally, the 607 Line would have to be phase-shifted (power flow regulation by adjusting the angle at which the power is

transmitted). A phase shifter would be required at the Truckee Substation for the 607 Line that connects the Truckee Substation to the Glenshire Substation (located east of Truckee and outside the project area shown in Exhibit 3-2).

### ***Rationale for Elimination***

This alternative would be feasible from a technical, legal, and regulatory perspective; however, this alternative would not meet the project objective of providing reliable overland vehicle access to the 625 Line for inspection, maintenance, and repairs; nor would it reduce potential environmental effects. In particular, as discussed above, under the alternatives considered but rejected entitled “Rebuild the 625 Line along its Existing Route,” full access to the 625 Line would not be achievable and the project objective of reliability would not be addressed. Moreover, this alternative would not minimize environmental effects and would cause impacts greater than those identified for the action alternatives, primarily due to the need for a new transmission line corridor between Incline and Kings Beach, potential expansion at the North Truckee and Truckee Substations to accommodate the required phase shifters, and more new access ways when compared to the action alternatives. Because this alternative would not meet the project objectives and would not reduce environmental effects, it was eliminated from further review and consideration.

## **Utilizing Distribution Backup for Single-contingency Transmission Outages on the North Lake Tahoe Transmission System**

### ***Description***

This alternative would include installation of a 12 MVA transformer at the Truckee Substation along with a new distribution feeder line to the Northstar-at-Tahoe Resort. The intent would be to provide an alternative line to deliver power to the Northstar Substation, thereby decreasing demand on the 650 Line and allowing more capacity in the line to accept rerouted power during an outage elsewhere in the system. Improvements to the 650 Line included in the action alternatives would not be implemented under this alternative.

### ***Rationale for Elimination***

This alternative would be feasible from a technical, legal, and regulatory perspective. However, this alternative would not meet the project objective of providing reliable capacity to assure adequate service to all customers during single-contingency outages. While this alternative would alleviate some of the load to the Northstar Substation by relieving the 650 Line in the event of an outage elsewhere in the system, it would not relieve sufficient load such that power could be transferred around the loop in the event of a single-contingency outage. In summary, the proposed enhancement of the distribution level infrastructure would not be sufficient to support the larger power line infrastructure during a single contingency outage. From an environmental perspective, effects would be reduced since modification to the system would be limited. However, because this alternative would not meet the project objective of assuring adequate service to all customers during single-contingency outages, it was eliminated from further review and consideration.

## **Utilizing Additional Diesel Generation to Provide Reliable Capacity for Transmission Outages**

### ***Description***

This alternative would include constructing one or more additional diesel generation stations outside the Lake Tahoe Basin to provide power during system failures. Any new diesel generation facilities would need to be located in the vicinity of a substation to allow power from the generators to be fed into the transmission system. Under this alternative, the issue of power line capacity during single or multiple contingency outages would still occur; that is, the existing 60 kV lines would still not be of sufficient size to reliably accept re-routed power if one or more other lines in the system were not operational. There would be greater flexibility in power sources, but the existing 60 kV lines would still limit delivery of that power to different parts of the system. Therefore, under



this alternative the power line and substation upgrades associated with the action alternative would still be required.

Note that an in Tahoe Basin scenario was also considered where a significant portion of the generation would need to be installed near an existing substation (i.e., Tahoe City or Kings Beach). Based on preliminary review, it was determined that this scenario would likely not be feasible from a regulatory perspective (i.e., air quality/stationary source emissions regulations). If some level of in basin diesel power generation were feasible (which is not likely given the current regulatory air controls), the allowable generation capacity or hours of operation would not be sufficient to meet the project objectives of providing reliable capacity to assure adequate service to all customers during single-contingency outages and reducing dependence on the Kings Beach Generation Station. The Kings Beach Diesel Generation Station is currently limited to 721 hours of annual operation. Although it is likely infeasible, it is reasonable to assume that new generation would have similar or potentially greater, limitations. Therefore, if there were a need for use of both the existing and new generation stations, after 1,442 hours of total use no back up would be available. Therefore this scenario was not considered further.

### ***Rationale for Elimination***

This alternative would be feasible from a technical, legal, and regulatory perspective. However, this alternative would result in greater environmental effects than the action alternatives and would not meet the project objectives and goals. Specifically, the environmental effects of the action alternatives would occur since the power lines and associated facilities would require upgrades; plus, increased environmental effects would occur from construction, operation, and maintenance of one or more additional diesel generation stations. Although the diesel generators would primarily be run during peak power demand periods or during outages of parts of the system, and they would meet more stringent Tier II emission standards, substantial adverse air quality impacts could as a result of operation. Increased noise impacts and fuel handling and storage would also be a concern. Therefore, even though this alternative would be feasible and meet project objectives, since it would not reduce environmental effects but would result in greater environmental effects, specifically increased operational effects related to air quality and noise, this alternative was eliminated from further review and consideration.

## **Submarine Cable Alternative**

### ***Description***

This alternative to the 625 Line rebuild would include installation of an approximately 10 mile long special water rated 120 kV submarine high voltage alternating current (HVAC) cable between the Kings Beach and Tahoe City Substations. This cable would be buried from the substations to the lake entrance points and would then be laid along the bottom of Lake Tahoe. Installation is estimated to require 25 cable splices to join segments of cable over the 10 mile route. Due to the required splicing of the cable, which would contribute to outage risk or failure to the 120 kV loop system, the existing 625 Line would need to remain in service with some additional substation modifications to allow for the existing 60 kV system to remain operational as a limited backup in the event of failure. Under this alternative the 650 Line would be upgraded consistent with one of the approaches in the action alternatives.

### ***Rationale for Elimination***

This alternative would be feasible from a technical, legal, and regulatory perspective. However, this alternative would not meet the project objective of providing reliable capacity to assure adequate service to all customers during single-contingency outages.

The following issues have been identified.

- ▲ **Reliability.** Similar lines operating in the United States are primarily direct current (DC) and generally not critical as single contingency outage lines. Utilities typically utilize high voltage (HV) DC cable in applications similar to this alternative where there is a submarine length requirement longer than 10 miles, and a voltage transmission above 60 kV. This is because HVDC cables are more efficient for long distance transmission than HVAC cables due to heat generation and power losses in the cable. The North Lake Tahoe Transmission System is an AC system with no ability to integrate DC conversion into the termination points of the submarine cable due to the required land and high cost. Given this, the submarine cable alternative evaluation was completed using HVAC.

Another technical constraint is the splicing of submarine cable. Splicing in general is not desirable because these locations are typically where failures occur. Due to the length of this alternative, approximately 25 splices would be required. Introducing this many points of potential failure causes operational and maintenance concerns. Additionally, in the event of failure, there is concern that the repair process (i.e., lifting the cable from the lake bottom) could impact the cable casing and adjacent splices and, in essence, create a weakened system with the potential for on-going “cascading” failure at the splice points. Technology does exist that would allow for the cable to be manufactured in one continuous length, which would eliminate the splicing concerns. This type of cable is cross-linked polyethylene cable, manufactured in Sweden, and is being used in the off shore wind generation and oil drilling industries. Essentially, as the cable is extruded, it is loaded onto ships for transport and installation. Transporting a 10 mile length of cable from Sweden to Lake Tahoe via ship would be impossible. Hence, using this technology was not given further consideration. To address this reliability concern, and to allow for switching in the event of failure, the existing 60 kV 625 Line would need to remain in service and the Tahoe City and Kings Beach substations would need to be expanded to accommodate the addition of 120/60 kV transformers.

- ▲ **Installation and repair.** The HVAC cable is special water-rated cable that is manufactured overseas. It would be necessary to purchase the cable from a proven manufacturer that would provide a full warranty for an extended period of time. As such, that manufacturer would also be required to complete the installation and any maintenance or emergency repair. The installation of this cable is conducted utilizing a barge that is brought to the job site on trucks and assembled on site. In the case of the distribution submarine cable installed at Emerald Bay, that barge required three trucks with special permitting to allow travel into the Lake Tahoe area. For a three phase 120 kV installation, the cable manufacturer indicated that the required barge would be substantially larger. Further investigation would need to be conducted to establish the barge size requirements and transport needs, as well as the necessary permitting. Note that a similar barge would also be needed in the event of a cable failure in order to complete the repairs. Unlike the existing Emerald Bay Cable, which is a distribution line (14.4 kV), does not contain splices, and has contingency options, this alternative would likely require long repair times due the need for specialized work crews.
- ▲ **Cost.** Preliminary cost estimates for the initial installation project costs of four to five times the other alternatives under consideration (\$62 million versus \$14 million for an overhead line). This is just for the cable installation and does not include any terminations, which would add substantially to the cost. It also does not include potentially expensive maintenance costs.

In addition, although construction of an upgraded 625 Line would not be required on land under this alternative, thus potentially avoiding or minimizing some significant environmental effects, installation of a submarine cable in Lake Tahoe could generate different or more severe water quality, recreation, biological, and hazard and hazardous materials impacts than those associated with the action alternatives. Therefore, because this alternative would not provide reliable capacity to assure adequate service to all customers during single-contingency outages, and could result in new or more severe environmental effects, it was eliminated from further review and consideration.

## Installing Power Lines Underground

### **Description**

This alternative would include underground installation (“undergrounding”) of significant portions of the 625 and/or 650 Lines. A preliminary review was completed to determine viable routes for consideration. Based on this review by a design engineer, it was determined that SR 28 was the most direct route for the 625 Line; however, due primarily to the limited shoulder along the highway as well as conflicts with multiple existing utility lines, the entire 625 Line should be installed underground within the SR 28 travel lanes. During the design engineer evaluation of undergrounding of the 625 Line from the Tahoe City Substation to the Kings Beach Substation along SR 28, it was identified that this section of highway is very congested with existing overhead utilities, including power distribution, telephone, and cable television lines. For the purposes of this evaluation, it was assumed that only the transmission line would be put underground and the other utilities would remain.

Under this alternative, a significant portion of the 650 Line would be installed in and along SR 267, and portions of the remaining power lines would be undergrounded along specific overland portions of the existing routes to minimize the visibility of project facilities. In forested areas where the line would be undergrounded, there could be a reduced width of the tree removal/vegetation management corridor from the 40-feet identified for the project, but undergrounding would not eliminate tree removal and vegetation management entirely. Trees, brush, and boulders would need to be removed to install an underground power line, and trees would not be allowed to regrow over the line to maintain vehicle access for inspections, maintenance, and repairs, and to prevent tree root damage to the buried conduit.

SR 28 is a heavily traveled roadway that provides the primary access around Lake Tahoe between Tahoe City and Kings Beach. As such, there can be considerable congestion during the summer months. Construction on this route would require extensive lane closures and traffic delays. The construction pace would be slow and with the short TRPA-established construction season (between May 1st and October 15th), it would extend over approximately five seasons (summers).

During operation, underground facilities are generally less apt to fail in winter weather, but are more difficult to access due to limited visibility and use of the roadway medians and shoulders to store ploughed snow. Vaults would be located approximately 2,600 feet apart. In addition to needing access to these vaults during outages, crews would need access periodically (usually during the summer) for inspection and routine maintenance. Accessing these vaults would require lane closures and traffic delays where they are within or adjacent to roadways.

### **Rationale for Elimination**

This alternative would be feasible from a technical, legal, and regulatory perspective and would largely meet the project objectives and need. One objective that may be compromised would be to provide more reliable access to the 625 Line for operation and maintenance activities. While undergrounding often does provide more reliable access, seasonal traffic and snow storage would result in reduced access in the project area.

This alternative would not reduce overall environmental effects as potential benefits of undergrounding would be outweighed by the substantial environmental effects that could occur. For instance, substantial ground disturbance is typically required for undergrounding. Underground installation is a slower process, increasing the time period for construction and construction-related impacts to air quality, noise, and traffic (i.e., lane/road closures). Effects could include increased:

- ▲ potential for erosion and sedimentation;
- ▲ disturbance to previously undisturbed habitat that supports special-status vegetation communities, plants, and wildlife;



- ▲ potential to disturb currently undocumented hazardous materials sites;
- ▲ potential to disturb known and unknown potentially significant archeological resources and resources of concern to Native American Tribes;
- ▲ air emissions of criteria pollutants due to an increase in required construction equipment for trench activities (e.g., excavators, back hoes), dust generation, and truck trips to haul trench spoils and import bedding and back-fill;
- ▲ construction related noise both on-site and off-site (i.e., increase in truck trips); and
- ▲ traffic effects on local area roadways from increased truck trips.

This alternative was identified to reduce environmental concerns related to aesthetics, fire risk, and vegetation management. However, it would create issues related to stormwater management and vehicle emissions. A key environmental issue would be the pumping of vault water and the management of the runoff from the vaults. This is a problem that is difficult to address. During emergency outage situations, vaults are often full of run-off water and must be immediately pumped. Under the California State Water Resources Control Board regulations, pumping directly to the storm drain is not allowed within the Lake Tahoe Basin. As such, pumper trucks would be needed. Again, similar to the effect of snow storage, this effort could greatly increase outage durations. Another increased environmental issue would be automobile emissions during traffic stoppages and/or delays during construction. These stoppages and delays would occur during construction (five summers) and continue (on a lesser scale) during summer inspection and maintenance periods.

Based on the general discussion above, as well as the more specific preliminary evaluation of the undergrounding of the 625 Line along SR 28, it has been determined that while this alternative is feasible and would meet several of the project objectives, it would result in increased environmental effects when compared to the project alternatives. Accordingly, this alternative has been eliminated from further consideration.

## **Non-Wires Alternative – Demand Management Conservation**

### ***Description***

Demand management conservation programs are designed to reduce and/or manage customer energy consumption. These programs are designed to either reduce the overall use of energy or to shift the consumption of energy to off-peak times. By reducing or better managing energy consumption, development or upgrading of delivery infrastructure may not be needed. CPUC regulatory requirements dictate that supply-side (e.g., energy generation and delivery infrastructure) and demand-side (e.g., energy conservation) options should be considered on an equal basis in a utility's plan to acquire lowest cost resources.

CalPeco currently offers a number of energy efficiency programs in California, under the umbrella of its Rebate and Savings program. The specific programs are divided into residential, business, builders and buyers, and energy management assistance programs. Under this alternative further energy efficiency and management programs would be considered in an attempt to meet the project objectives through demand-side options.

### ***Rationale for Elimination***

Reductions in demand through energy conservation programs are part of CalPeco's future operations and are incorporated into its long-term peak load forecasts. Existing demand management conservation programs run by CalPeco include programs that offer energy saving measures and rebates to customers who participate and implement energy saving projects. However, these programs require voluntary participation. As separate and standalone programs, CalPeco cannot guarantee that such voluntary programs would provide sufficient energy conservation to achieve either the capacity or reliability needs of CalPeco in the Tahoe Basin, as stated in the objectives for the project. With current energy demands in the North Lake Tahoe Transmission System meeting, and during peak demand periods exceeding, the design capacity of the system, it is not technically feasible to implement sufficient demand-side measures to avoid the need for improvements to delivery infrastructure

included in the action alternatives. Although demand management conservation may be feasible from a legal and regulatory perspective, and would eliminate significant environmental effects associated with the action alternatives, because this approach would not meet the project objectives/need, and is not technically feasible, this alternative has been eliminated from further consideration.

## Utilizing Reactive Capacitance to Delay the Need for the Project

### *Description*

Reactive capacitors are a piece of equipment that can be added to substations that can allow utilities to increase the amount of power that can be transmitted over their lines. Under this alternative, reactive capacitors would be added to substations in the North Lake Tahoe Transmission System.

### *Rationale for Elimination*

This alternative would be feasible from a legal and regulatory perspective, but would be technically problematic and ultimately would not meet the project objectives and need. While the installation of reactive capacitors is a valid consideration and is used by some utilities to defer installation or upgrading of facilities, it is a scenario that is problematic with specific types of electrical loads. The applicant evaluated this option but determined that specific issues unique to the North Lake Tahoe Transmission System warrant that large scale installation of capacitors should not be relied upon as a substitute for the proposed project.

Modeling of the North Lake Tahoe Transmission System found that, not only was the harmonic resonance a concern, but that there was not sufficient space at the Brockway and Squaw Valley Substations to complete installation of reactive capacitors in a safe manner for operation and maintenance. The following specific concerns were identified:

- ▲ **Harmonic tuning issues.** In the Lake Tahoe region, equipment that utilizes adjustable speed drives and could be effected by harmonic tuning includes ski resort equipment such as chair lifts and trams, and machinery used for various industries, such as wood working equipment. This equipment is operated with the use of variable speed drives or adjustable speed drive motors. Variable speed drives are susceptible to harmonic tuning issues that can occur when capacitor banks are switched. Harmonics would be particularly sensitive when large amounts of capacitors are switched in multiple banks, as would be the case at the Squaw Valley Substation. In order to delay the 625 and 650 Electrical Upgrade Project, multiple capacity banks would be required.
- ▲ **Reactive Concerns.** An example of a reactive concern is that adding capacitors to a peak load would cause a significant leading power factor. The resulting leading power factor would make operations for voltage regulators (oil type) and breakers difficult, causing potential operating problems, especially with older equipment. These situations could arise by adding capacitors to the Squaw Valley and the other substations in North Lake Tahoe.
- ▲ **Limited Room.** In many of the CalPeco substations in the North Lake Tahoe Transmission System, space is limited and there would simply be no room for installation of reactive capacitors and the associated need for upgraded voltage regulators and breakers. This issue involves not only ease and efficiency of operations, but is critical to the safety of operation inside the substations. This is specifically the case at the Brockway and Squaw Valley Substations. Preliminary evaluations showed that multiple reactive capacitance banks would be necessary at Squaw Valley.

If reactive capacitors were installed at substations in the North Lake Tahoe Transmission System, it would only delay for a short time the need for the proposed project as they would not produce a large enough increase in system capacity to address the peak demands that currently meet or exceed the system's design capacity. Therefore, installation of reactive capacitors would not meet any elements of the project purpose and need and objectives. Ultimately, implementation of this alternative would involve installation of reactive capacitors and

related equipment at substations, and the expansion of some substations to accommodate this equipment, plus implementation of one of the action alternatives, resulting in greater environmental effects than the action alternatives alone. Therefore, because the alternative would only delay implementation of the proposed project, would increase the overall environmental effects due to the required substation additions, and could reduce reliability by introducing new technical issues into the system, it has been eliminated from further consideration.

## **Relocate the Tahoe City Substation**

### ***Description***

The Tahoe City Substation was constructed in 1937. It functions as one of the critical substations in the North Lake Tahoe Transmission System. Within the substation, there are two power line terminations and multiple distribution getaways. Specifically, the 629 Line which runs between the Tahoe City and Squaw Valley Substations, and the 625 Line which runs between the Tahoe City and Kings Beach Substations both terminate at this facility. Electricity from these lines is stepped down at the substation to lower voltages to supply power to the Tahoe City area. See Exhibit 3-2 for the elements of the overall North Lake Tahoe Transmission System and specifically the line terminations into the Tahoe City Substation. Upon relocation, the existing Tahoe City Substation would be maintained by CalPeco for use as a material storage yard.

In 1994, TRPA and the Placer County Board of Supervisors approved the Tahoe City Community Plan, which recommended consideration of substation relocation. This alternative was considered to address that recommendation (Tahoe Regional Planning Agency and Placer County 1994). Ownership of the parcel identified for relocation of the facility has since been transferred, and it is no longer available as an alternative location. Further, one of the reasons given in the community plan for the relocation was to improve scenic quality for the SR 89 TRPA travel route. Since publication of this plan, the travel route rating for this section of highway has increased as a result of other improvements in the community plan and the affected unit is now in attainment with the TRPA threshold. Therefore, the need to relocate this facility is significantly diminished and may no longer exist.

### ***Rationale for Elimination***

This alternative could be feasible from a technical, legal, and regulatory perspective (with significant challenges described below) and would meet the project objectives and need. However, this alternative would not reduce overall environmental effects of the project such that these benefits would outweigh the substantial environmental effects that could occur with relocating a substation.

For instance, relocating a substation would require locating a new site approximately of 0.5 acre that would be graded to prepare the site for installation of the substation and connections to the electrical grid. Grid connections would require power lines and distribution lines into and out of the substation, as well as electrical vaults (that require excavation) for shifting the overhead distribution lines to underground conduit to enter the substation site. The existing conduits in the bridge spanning the Truckee River do not have sufficient capacity for the reroute of all the distribution lines.

Relocation rather than rebuilding of the Tahoe City Substation would also lengthen the construction period, thereby increasing construction-related impacts such as air emissions, noise, and traffic (i.e., lane/road closures). Effects of relocation of the Tahoe City Substation, similar to those discussed for undergrounding, could include increased:

- ▲ potential for erosion and sedimentation;
- ▲ disturbance to previously undisturbed habitat that supports special-status vegetation communities, plants, and wildlife;
- ▲ potential to disturb known and unknown hazardous materials;



- ▲ potential to disturb known and unknown potentially significant archeological resources and resources of concern to Native American Tribes;
- ▲ air emissions of criteria pollutants due to an increase in required construction equipment for site preparation and excavation activities (i.e., grading equipment, hauling out excess site and excavation material), dust generation, and truck trips to haul spoils from the site;
- ▲ construction related noise both on-site and off-site (i.e., increase in truck trips);
- ▲ traffic effects on local area roadways from increased truck trips; and
- ▲ visual effects because the site would be visible from Lake Tahoe and due to the need to string distribution over the Truckee River because there is not sufficient capacity within the existing conduits in the bridge to accommodate this alternative.

Accordingly, although the substation could be relocated, the increased environmental effects that could result would not justify relocation. Moreover, there are no significant adverse effects associated with the modification to the Tahoe City Substation as proposed and analyzed in this EIS/EIS/EIR that would warrant consideration of this alternative. Once all considerations were reviewed and evaluated, it was determined that this alternative does not better address any of the project goals, would have a substantially increased impact on the ratepayers, and would pose potential technical hurdles that may not be able to be feasibly addressed within the established schedule. As such, this alternative was eliminated from further consideration.

## 3.6 REQUIRED PERMITS AND APPROVALS

CalPeco is seeking permit approvals from the three lead agencies with primary discretionary approval for the project evaluated in this EIS/EIS/EIR.

Specifically, CalPeco is seeking to obtain a Special Use Authorization from the USFS, both the LTBMU and the Tahoe National Forest units, for implementation of the project on NFS land managed by the USFS. Of the approximately 24.1 miles of power line alignment under Alternative 4 (Proposed Alternative), 12.1 miles are in the LTBMU and 1.7 miles are in the TNF. The USFS is also the federal lead agency for the project for compliance with NEPA. As the federal lead agency, the USFS would be responsible for compliance with Section 7 of the federal Endangered Species Act and Section 106 of the National Historic Preservation Act.

As part of the USFS issuance of a Special Use Authorization, the USFS would require that the project include implementation of applicable standard BMPs developed on both a national and regional level. Although focused on soil and water resources, these BMPs address a variety of related environmental issue areas such as management of hazardous materials, protection of waters of the U.S. and wetlands, vegetation management, and timber harvest practices. These BMPs are contained in two documents:

- ▲ National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide. USDA Forest Service, FS-990a. April 2012; and
- ▲ Region 5 Forest Service Handbook (FSH) 2509.22 Soil and Water Conservation Handbook, Chapter 10 Water Quality Management Handbook, Amendment No: 2509.22-2011-1, December 5, 2011

A summary of the applicable national and regional BMPs and the project design features, project description elements, APMs (discussed below), and mitigation measures that implement them is provided in Appendix G. In addition, through coordination with the Lahontan Regional Water Quality Control Board (LRWQCB) over the past several years, the LTBMU has developed a standard set of vegetation management design features that assist LTBMU projects in meeting LRWQCB Timber Waiver requirements. Many of the standard vegetation management design features are incorporated into the project design, APMs, mitigation measures, and BMPs identified in Appendix G. However, additional standard design features not clearly identified in these sources, or that provide additional detail not identified in these sources are listed in Appendix G. As needed, these standard

vegetation management design features would be included in the USFS Special Use Authorization, Timber Sale Contracts, or other applicable agreements or authorizations.

CalPeco is also seeking to obtain a Land Use and Development Permit from TRPA for implementation of all project components that fall within the Lake Tahoe Basin boundaries. TRPA is responsible for ensuring that the project is consistent with the Tahoe Regional Planning Compact, the TRPA Rules of Procedure, and the TRPA Code of Ordinances, and that the project would allow for the attainment and maintenance of environmental thresholds established to protect the unique values of the Lake Tahoe Basin.

Public electric utilities are regulated by the CPUC, which is the lead agency for compliance with CEQA for this project. The CPUC reviews the permit application for adequacy in conjunction with environmental review pursuant to CEQA. CalPeco must comply with the CPUC's GO 131-D, which contains the permitting requirements for the construction of substations and power line facilities and GO No. 95, which details the requirements for overhead line design, construction, and maintenance. CalPeco is seeking to obtain a Permit to Construct (PTC) from the CPUC for this project pursuant to GO 131-D, and submitted a PEA to the CPUC in August of 2010 as required by the Public Utilities Code.

No local discretionary permits are required, since the CPUC has preemptive jurisdiction over the construction, maintenance, and operation of CalPeco's facilities, as outlined in Section XIV.B of GO 131-D. The applicant would still have to obtain all ministerial building and encroachment permits from local jurisdictions, and GO 131-D requires that the applicant comply with local building, design, and safety standards to the greatest degree feasible to minimize project conflicts with local conditions.

CalPeco would obtain all other applicable permits for the project from federal, state, regional and local agencies with approval authority over the project.

Table 3-7, Required Permits and Authorizations, lists the potential permits and approvals required for project implementation.

Table 3-7 Required Permits and Authorizations		
Agency	Permit/Authorization	Action Requiring Permit Approval or Review
<b>Federal</b>		
USFS (LTBMU and Tahoe National Forest)	Special Use Authorization	Construction on NFS lands
	NEPA Review/Approval as a Lead Agency	Issuance of a Special Use Authorization
	Timber Sale Contract	Harvesting of timber on NFS lands
US Fish and Wildlife Service	Section 7 Consultation (through the USFS review process)	Potential impacts to a federally listed species or its habitat
Advisory Council on Historic Preservation	Section 106 Consultation (through the USFS review process)	Potential impacts to cultural resources
US Army Corps of Engineers	Section 404 Individual or Nationwide Permit	Potential work in waters of the United States, including wetlands
	NEPA Review/Approval as a Cooperating Agency	Authority to Construct on USACE Land
Federal Aviation Administration	Air Traffic Consultation	Review and authorization of helicopter operations (e.g., flight paths, communication protocols)
<b>State</b>		
CPUC	PTC	Construction or upgrade of facilities under 200 kV
	CEQA Review/Approval as a Lead Agency	Issuance of a PTC

<b>Table 3-7 Required Permits and Authorizations</b>		
<b>Agency</b>	<b>Permit/Authorization</b>	<b>Action Requiring Permit Approval or Review</b>
California Department of Fish and Wildlife	Section 1602 Streambed Alteration Agreement	Potential disturbance to the bed or bank of jurisdictional waters
	2081 Incidental Take Permit	Potential impacts to a state-listed species
State Historic Preservation Officer (SHPO)	SHPO Consultation (through the Section 106 process)	Potential impacts to cultural resources
California Department of Forestry	Timber Harvest Plan	Harvesting of timber on private lands
State Water Resources Control Board	Water Quality Order No. 99-08 – National Pollution Discharge Elimination System (NPDES) General Permit for Stormwater Discharges associated with Construction Activity	Discharges of stormwater runoff associated with construction activity involving land disturbance of 1 or more acres
	Water Quality Order No. 2003-0003 – Statewide General Waste Discharge Requirements for discharges to land with a low threat to water quality	Dewatering of excavations to land surface
Lahontan Regional Water Quality Control Board	Section 401 Water Quality Certification	Potential impacts to state water quality; required when a federal permit is issued
	Board Order No. R6T-2007-0008 – Waiver of Waste Discharge Requirements Related to Timber Harvest and Vegetation Management Activities	Potential impacts to state water quality resulting from tree and vegetation removal activities
	Board Order No. R6T-2005-2007 – Waste Discharge Requirements and NPDES General Permit No. CAG616002	Discharges of stormwater runoff associated with construction activity involving land disturbance of 1 or more acres in the Lake Tahoe hydrologic unit
	Board Order No. R6T-2008-0023 – Renewed Waste Discharge Requirements and NPDES General Permit for Limited Threat Discharges to Surface Waters	Dewatering of excavations to surface waters (if overland discharge is not feasible)
Caltrans	Encroachment Permit	Construction, operation, and maintenance within, under, or over state highway ROWs
California Department of Parks and Recreation	Encroachment Permit/Easement Expansion	Authority to conduct construction activities on State Parks land.
<b>Local</b>		
Tahoe Regional Planning Agency	Project Review/Approval as the Lead Agency	Issuance of a Linear Public Service Construction Permit
	Linear Public Service Construction Permit	Work within the Lake Tahoe Basin
	Tree Removal Permit	Removal of trees in the Lake Tahoe Basin
Placer County and Nevada County	Special Use Permit/Modification to Existing Special Use Permit	Construction, operation, and maintenance within, under, or over county road ROWs
Northern Sierra Air Quality Management District and Placer County Air Pollution Control District	Dust Control Plan	Disturbance of more than 1 acre of topsoil
Town of Truckee	Encroachment Permit	Construction, operation, and maintenance within, under, or over town road ROWs



### 3.7 APPLICANT PROPOSED MEASURES

Table 3-8 identifies CalPeco's APMs. These APMs were originally proposed in the June 2010 PEA, and have been modified during project development. All APMs would be followed during project planning, construction, and operations and maintenance activities. CalPeco has committed to implementing these measures in order to reduce the potential direct and indirect impacts that could result from the action alternatives. Therefore, the APMs are considered part of the project description.

The impact analysis in this EIS/EIS/EIR assumes implementation of all APMs. However, where other impacts are identified that are not addressed by these APMs, or where the APMs are not adequate to reduce impacts to less than significant levels, the EIS/EIS/EIR recommends additional mitigation measures. APMs will be incorporated into the Mitigation Monitoring, Compliance, and Reporting Program developed for this Proposed Project, and implementation of the APMs will be monitored in the same fashion as the mitigation measures developed in this EIS/EIS/EIR.

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
Scenic Resources								
SCE-1	<p>The following measures will be implemented during construction:</p> <ul style="list-style-type: none"><li>Construction activities will be kept as clean and inconspicuous as practical.</li><li>Construction storage and staging will be screened, where practical, with opaque fencing from close-range residential views and public viewing areas.</li><li>Slash treatment will be chipping, mastication, or lop and scatter as determined by the applicable land owner/manager.</li><li>When “cut-tree” marks are utilized, marks will be placed on back sides of trees or away from views of the travelling public.</li><li>Within the immediate to middle-distance foreground (300 feet), log skidding trails will be re-graded, to the degree possible, back to their original, natural contour and rehabilitated with vegetation.</li><li>Non-affected timber and ground vegetation will be protected during harvesting and slash treatment.</li><li>Trees and vegetation within the “clear zone” that do not pose a risk to power lines will be preserved.</li><li>Visual diversity of the ground surface will be maintained through irregular scatter of limbs, seeding, and other means as practicable.</li><li>Barriers/boulders/downed logs will be placed in strategic locations to discourage the establishment of user-created trails. Implement</li></ul>	Construction-related visual impacts associated with grading and ground disturbance required for the installation of new structures and access roads could occur. While it is expected that these visual impacts would be short-term, this measure would minimize the potential for views from nearby residences and the general public to be significantly impacted during the duration of construction.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	restoration of temporary access ways in a manner that minimizes visibility from intersecting roads. <div> <div></div> <div>Cut stumps will be 6-inch maximum height measured from the uphill side.</div> </div>							
SCE-2	Self-weathering dark brown steel poles (CorTen), or equivalent, will be used for the power lines to reduce potential visual contrast.	This measure would require that the new power line poles be dark brown to blend with the color of the coniferous forest backdrop so that the poles would not substantially alter or degrade the existing visual character or quality of the project's setting.		✓	✓	✓	✓	
SCE-3	Non-specular conductors will be used for the power lines to reduce the potential for new sources of glare. Non-specular conductor has been either mechanically or chemically treated to reduce reflectivity and has a smooth matte finish which blends more naturally with the environment.	On the power lines, non-specular conductors would be used to reduce the potential for adverse impacts on views in the area as a result of glare from the conductors.		✓	✓	✓	✓	
SCE-4	A non-reflective finish will be used for substation equipment at all substations to reduce the potential for new sources of glare.	Using a non-reflective finish for substation equipment would minimize glare that could potentially adversely affect day or nighttime views in the area.						✓
SCE-5	Screening through landscaping and non-vegetative means will be installed at the Tahoe City Substation to the degree that the rebuilt substation will not be obvious to the casual observer, and will account for public views of the substation from all sides. Plant material will be appropriate to the local landscape setting and will be consistent with CalPeco's technical requirements for landscaping in proximity to substation and transmission facilities. More specifically, the following will be implemented:	The Tahoe City Substation is located within a TRPA scenic roadway unit and vista, as identified in the Lake Tahoe Basin Scenic Resource Inventory. This measure provides for landscape screening to reduce the project's potential visual impacts from SR 89 and the recreation trail.						✓ <sup>2</sup>

<sup>2</sup> SCE-5 applies only to the Tahoe City Substation.



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	<ul style="list-style-type: none"> <li>With the property owner's permission, native conifer trees will be planted outside of the perimeter fence along the southwest and southeast sides of the substation site. Tree planting will replace existing trees that will be removed and will provide additional screening and landscape backdrop with respect to views from SR 89.</li> <li>With the property owner's permission, on the southeast side of the substation, a mixture of trees and tall shrubs will be planted along the recreational trail adjacent to SR 89 to provide additional screening.</li> <li>With the property owner's permission, at the western corner of the substation site, a mixture of shrubs will be planted outside of the perimeter fence in order to screen views from the recreation trail.</li> </ul>							
SCE-6	Poles proposed in the vicinity of the highly visible clearing adjacent to Mount Watson Road will be placed so as to span the clearing or otherwise minimize their visibility from the Fiberboard Freeway.	In one location along the new 625 Line under Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), an angle pole would be located in an open clearing along Mount Watson Road. This pole has the potential to appear prominent from the roadway. This measure would require the relocation of the pole to the eastern edge of the clearing to reduce project visibility.		✓				
SCE-7	In cases where replacement poles for the 650 Line are adjacent to SR 267 and will be visible in unobstructed foreground public views from the roadway, poles will be carefully sited to eliminate or substantially reduce their visibility from the highway within the Tahoe Basin as compared to the existing 650 Line without causing new visual impacts from tree removal or construction of access	This measure would require carefully siting replacement poles along the 650 Line to minimize their visibility from SR 267, which is identified as a scenic roadway unit in the Lake Tahoe Basin Scenic Resource Inventory.			✓			

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	ways that will be required to erect and maintain the line. Any revised alignment or pole placement will be reviewed and approved by applicable land owners, agencies, and utilities.							
SCE-8	In cases where replacement poles for the 625 Line are adjacent to the Truckee River and will be visible in unobstructed foreground public views along the river or adjacent trails, poles will be carefully sited to minimize their visibility. The westernmost pole on the south bank of the Truckee River where the power line crosses the river will be placed far enough from the river so as to be substantially unseen from the pedestrian bridge. The remaining poles along the south bank of the river will be located southward, outside the river corridor and behind the trees that line the riverbank such that visibility of the power line is minimized as viewed from SR 89, the Truckee River, and the pedestrian bridge. Any revised alignment or pole placement will be reviewed and approved by applicable land owners, agencies, and utilities.	This measure would require carefully siting replacement poles along the 625 Line to minimize their visibility from the Truckee River and adjacent 64-Acre Recreation Site		✓				
SCE-9	In consultation with the USFS and to reduce potential project visibility, selective, site-specific conifer tree planting will be considered in limited areas along the new 625 Line route where relatively unobstructed foreground views of new structures are seen from Mount Watson Road. Placement of new trees will not conflict with project operations or safety requirements.	New conifer tree planting in selected areas would provide screening, thereby reducing the project's visibility and visual contrast from Mount Watson Road, which is a key public viewpoint.		✓				
<b>Air Quality</b>								
AQ-1	The applicant will submit a Construction Emission/Dust Control Plan to the NSAQMD and PCAPCD for approval prior to ground disturbance or vegetation removal associated with construction of the proposed project. The Dust Control Plan will summarize the APMs related to	This measure would assist in preventing exceedances in air pollution control district thresholds for emissions of particulate matter (PM).	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New	Line			
	emissions control during construction.							
AQ-2	Unpaved areas subject to vehicle access will be stabilized using water at least two times daily, or as needed to control fugitive dust. On NFS lands, unpaved roads will be watered at least as often as specified in Forest Service Handbook 2409.15 (USFS 1992). A locally approved chemical dust palliative, applied according to the manufacturer's recommendations, may be substituted for watering with approval from the applicable land owner/manager.	This measure would help ensure that dust abatement is implemented on a regular basis and as needed throughout construction and that only approved chemical dust palliatives would be used (where they are authorized). APM AQ-2, in conjunction with the other APMs for air quality, would assist in compliance with local air standards and plan thresholds for dust and PM.	✓	✓	✓	✓	✓	✓
AQ-3	All inactive, disturbed portions of the project's ROW will be covered, seeded, or watered, as needed to control fugitive dust, until suitable vegetative cover is established.	Watering, seeding, or covering of disturbed inactive areas would minimize fugitive dust and support compliance with local air quality thresholds.	✓	✓	✓	✓	✓	✓
AQ-4	Prior to any ground disturbance, sufficient water will be applied to the area to be disturbed in order to control fugitive dust emissions.	Watering the ground prior to disturbance would help to suppress dust. The measure, in conjunction with the other APMs for air quality, would support compliance with local air quality standards and thresholds.	✓	✓	✓	✓	✓	✓
AQ-5	If wind-driven fugitive dust cannot be stabilized using water or a chemical dust suppressant such that the resulting dust plume crosses the nearest property line, all grading and excavating activities must cease until dust can be effectively controlled.	This measure would limit the potential for fugitive dust to become a safety hazard or a nuisance to adjacent uses (such as roads and highways) and property owners during construction.	✓	✓	✓	✓	✓	✓
AQ-6	Exposed stockpiles (e.g., dirt, sand, etc.) will be covered and/or stabilized with water or a locally approved chemical dust stabilizer as needed to control fugitive dust emissions. When loading or unloading stockpiled material, material will be stabilized using water and/or drop heights will be minimized to control fugitive dust.	This measure is intended to reduce wind-driven fugitive dust from spoil stockpiles and when loading and unloading soil material.	✓	✓	✓	✓	✓	✓
AQ-7	Traffic speeds on unpaved roads and the ROW will be limited to 15 miles per hour.	This measure is intended to reduce fugitive dust by limiting vehicle speeds on unpaved access roads.	✓	✓	✓	✓	✓	✓
AQ-8	Construction vehicles and equipment will be cleaned to	This measure is intended to avoid tracking silt, mud,	✓	✓	✓	✓	✓	✓



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	prevent dust, silt, mud and dirt from being tracked off-site prior to entering public roadways.	and dirt onto public roadways and reduce fugitive dust emissions.						
AQ-9	Any visible trackout deposited on paved, public roadways will be cleaned up at the conclusion of each workday or at 24-hour intervals for continuous operation. If trackout extends for a cumulative distance greater than 50 feet, it will be cleaned up within 1 hour. Trackout will be cleaned with a wet sweeper or vacuum device.	This measure is intended to reduce fugitive dust by keeping public roadways clean so that dirt deposited on road surfaces by construction equipment does not become dust due to vehicles traveling over it. This measure also provides guidance on when, where, and how trackout should be cleaned from roadways.	✓	✓	✓	✓	✓	✓
AQ-10	Trucks transporting bulk materials off-site will be maintained such that no spillage can occur from holes or other openings in the cargo compartments. Loads will be completely covered or the bulk material will be wetted and loaded to maintain 6 inches of freeboard from the top of the container.	This measure is intended to reduce fugitive dust by minimizing the potential for materials to blow out of or spill from the beds of haul trucks.	✓	✓	✓	✓	✓	✓
AQ-11	CalPeco will limit actively graded areas to a cumulative total of 5 acres per day in order to control fugitive dust. The total area of disturbance can exceed this acreage so long as the actively graded portion is below this threshold.	This measure would control the amount of earth disturbance occurring simultaneously on different project components in order to keep fugitive dust emissions below established thresholds.	✓	✓	✓	✓	✓	✓
AQ-12	Traffic will be controlled by flaggers or other methods, as necessary, to improve traffic flow along roadways in the project area.	Improving traffic flow along roadways would reduce idling time of vehicles. Reducing idling time would reduce vehicle emissions.	✓	✓	✓	✓	✓	✓
AQ-13	Construction activities in more populated areas will be scheduled during off-peak hours, to the extent practical, to minimize impacts to traffic flow.	This measure would improve traffic flow along roadways, which would reduce idling time of vehicles and the associated emissions.	✓	✓	✓	✓	✓	✓
AQ-14	Vehicle idling time will be limited to a maximum of 5 minutes for vehicles and construction equipment, except where idling is required for the equipment to perform its task.	As stated previously, reducing idling time would reduce emissions.	✓	✓	✓	✓	✓	✓
AQ-15	All off-road diesel engines with a rated output of greater than 100 horsepower will, at a minimum, meet the Tier II California Emissions Standards for Off-Road Compression	This measure would reduce the emissions of PM and oxides of nitrogen emitted by heavy construction equipment, which would help to	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	Ignition Engines. If reasonably available, Tier III engines will be employed.	reduce project emissions.						
<b>Biological Resources</b>								
BIO-1	Prior to construction, all CalPeco, contractor, and subcontractor project personnel will receive training from a qualified resource specialist regarding the appropriate work practices necessary to effectively implement the APMs and to comply with the applicable environmental laws and regulations, including appropriate wildlife avoidance measures, impact minimization procedures, the importance of sensitive resources, and the purpose and methods for protecting such resources. Among other topics, the training will also include a discussion of BMPs to reduce the potential for erosion and sedimentation during construction. Additionally, CalPeco and designated environmental monitors for project construction will coordinate with the applicable public land owners/managers on communication, documentation and reporting, and data submittal protocols.	This measure is intended to provide all project personnel sufficient detail regarding the project's APMs, applicable environmental laws, regulations, and sensitive resources that have the potential to be encountered in the project area. This training would provide a basic level of environmental awareness to all project personnel.	✓	✓	✓	✓	✓	✓
BIO-2	CalPeco will conduct a complete floristic survey, including surveys for all special-status botanical species and invasive plants, during a time that coincides with the greatest number of blooming periods for target species. This survey will be conducted no more than one year prior to the start of construction. Occurrences of special-status botanical species and weed-infested areas will be flagged or fenced no more than 30 days prior to the start of construction. Flagging and fencing will be refreshed and maintained throughout construction. Implementation of this measure will occur in coordination with USFS	This measure would allow sensitive plants to be identified prior to construction and protected during construction. In addition, invasive plant populations would be avoided to the extent possible, thereby minimizing the potential spread of these species throughout the area by construction vehicles and equipment.	✓	✓	✓	✓	✓	
BIO-3	CalPeco will complete an invasive plant risk assessment for all ground-disturbing activities.	This measure is being implemented to respond to the USFS requirement for a weed risk assessment.	✓	✓	✓	✓	✓	
BIO-4	Before construction activities begin, CalPeco will treat	This measure would help prevent the accidental	✓	✓	✓	✓	✓	

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	invasive plant infestations where feasible. Treatments will be selected based on each species ecology and phenology. All treatment methods—including the use of herbicides—will be conducted in accordance with the law, regulations, and policies governing the land owner (e.g., TRPA in the Lake Tahoe Basin; LTBMU Forest Supervisor and Tahoe National Forest Supervisor on NFS lands). Land owners will be notified prior to the use of herbicides. In areas where treatment is not feasible, CalPeco will clearly flag or fence infested areas in order to clearly delineate work exclusion. Appropriate treatments will also be incorporated into tree removal and construction activities, such as a requirement that all cut live conifer stumps greater than 6 inches in diameter be treated with Sporax or an EPA-registered borate compound to prevent the spread of Annosus root disease.	spread of invasive plants and invasive plants into new areas where they do not currently exist. This measure also manages herbicide use in the Lake Tahoe Basin.						
BIO-5	Vehicles and equipment will arrive at the project area clean and weed-free and will be inspected by the on-site environmental monitor for mud or other signs that weed seeds or propagules could be present prior to use in the project area. If the vehicles and equipment are not clean, the monitor will deny entry to the ROW and other work areas.	This measure is intended to prevent the accidental introduction and spread of invasive plants via construction-related equipment by ensuring that the equipment is clean prior to use.	✓	✓	✓	✓	✓	✓
BIO-6	Vehicles and equipment will be cleaned using high-pressure water or air at designated weed-cleaning stations after exiting an infested area. Cleaning stations will be designated by a botanist or invasive plant specialist and located away from aquatic resources.	This measure is intended to prevent the accidental spread of invasive plants from areas of existing infestation to areas of non-infestation. Thorough cleaning of vehicles is one of the most cost-effective and efficient means of controlling the spread of invasive plants.	✓	✓	✓	✓	✓	✓
BIO-7	Only certified weed-free construction materials, such as sand, straw, gravel, seed, and fill, will be used throughout the project.	This measure would help prevent the introduction and spread of invasive plants from imported materials.	✓	✓	✓	✓	✓	✓
BIO-8	If invasive plant-infested areas are unavoidable, invasive	This measure would help prevent the spread of	✓	✓	✓	✓	✓	✓



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	plants will be cut, if feasible, and disposed of in a landfill in sealed bags or disposed of or destroyed in another manner acceptable to the USFS, TRPA, USACE, or other agency as appropriate. If cutting is not feasible, layers of mulch, degradable geotextiles, or similar materials will be placed over the infestation area to minimize the spread of propagules by equipment and vehicles during construction. These materials will be secured so they are not blown or washed away.	existing invasive plant infestations, if they are unavoidable during construction. Coordination with the applicable agency would promote proper implementation of the measure so that the spread of weeds is minimized.						
BIO-9	Exclusion zones will be established around any identified special-status botanical species. In consultation with a qualified biologist, CalPeco will first attempt to avoid effects of project implementation on special-status plants and protect occurrences <i>in situ</i> . In the event that a special-status plant occurrence cannot be avoided by construction activities, CalPeco will notify CPUC, CDFW, TRPA, and/or USFS, as applicable depending on the species regulatory status. CalPeco will consult with CDFW, TRPA, and/or USFS in order to establish appropriate mitigation measures. If seed collection or transplantation are selected as appropriate mitigations, then the following measures will apply: a) CalPeco will collect any mature seeds from the affected plants and store them at an appropriate native plant nursery or comparable facility; b) upon the completion of work, CalPeco will redistribute the seeds within the original location of the occurrence; c) CalPeco will establish performance standards for survivorship and will also monitor and document the success rate of the transplanted individuals for three consecutive growing seasons; d) if performance standards are not met, corrective measures will be implemented and monitoring and adaptive management continued until success criteria are met. Specifically for <i>Plumas ivesia</i> : if, through consultation with an occurrence's land manager, it is determined that	This measure is intended to prevent or compensate for impacts to rare plants, including <i>Plumas ivesia</i> . Consulting with the CDFG in the event the measure cannot be implemented would promote protection of the species.	✓	✓	✓	✓	✓	

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	Plumas ivesia plants cannot be avoided or protected <i>in situ</i> , then CalPeco will attempt to relocate all Plumas ivesia individuals. Plants that cannot be avoided during construction will be relocated to suitable habitat surrounding the 650 Line. If relocation is unsuccessful, CalPeco will consult with the CDFW and USFS in order to determine the cause of relocation failure and to establish appropriate corrective remedial measures.							
BIO-10	Any special-status botanical species identified during the floristic surveys will be documented, photographed, and submitted to the CNDDDB. CalPeco will notify and provide documentation to CPUC, CDFW, TRPA, and/or USFS, as applicable depending on the species listing status.	Identification and documentation of rare plants would be included in a widely-used database, providing increased scientific knowledge regarding species.	✓	✓	✓	✓	✓	
BIO-11	CalPeco will conduct protocol-level surveys during the appropriate season prior to construction in a particular area to determine whether northern goshawks or California spotted owls are nesting in planned work areas within suitable habitat along the new 625 Line, existing 625 Line, and 650 Line, including USFS-designated PACs or Home Range Core Areas (HRCAs).	This measure would identify the locations of any nesting California spotted owls and northern goshawks so they can be avoided during construction, as described in APM-BIO-12.	✓	✓	✓			
BIO-12	No vegetation management or treatment or other construction activities, other than vehicle passage on existing roadways, will occur within 0.25 mile of active California spotted owl nests during the breeding season (March 1 to August 31) or within 0.50 mile of active northern goshawk nests during the breeding season (February 15 to September 15), unless protocol-level surveys confirm that the birds are not nesting. A qualified biologist will have the ability to amend the start and end dates of these breeding seasons with concurrence from appropriate agencies if it can be determined that breeding has not started or that fledglings have left the nest. If the location of a nest site within a PAC is unknown, either surveys are required to locate the nest stand and	This measure is intended to avoid impacts to nesting California spotted owls and northern goshawks. The measure also provides for any changes to vegetation management to be approved by the appropriate agency.	✓	✓	✓			

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	determine nesting status or, as an alternative to surveys, an activity buffer will be applied to the 0.25-mile area surrounding the PAC. The activity buffer may be waived for activities of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location. Where a biological evaluation concludes that a nest site will be shielded from planned activities by topographic features that will minimize disturbance, the buffer distance may be modified in coordination with the USFS.							
BIO-13	To offset permanent removal of suitable habitat within designated PACs and HRCAs, CalPeco will assist the USFS in locating additional suitable habitat immediately adjacent to the PAC or HRCA removed to form a new PAC to support the USFS's goal of establishing additional PACs and maintaining specific acreages of California spotted owl and northern goshawk PACs and HRCAs. The amount of suitable habitat designated as a PAC or HRCA for each species is as follows: a spotted owl PAC is 300 acres, a northern goshawk PAC is 200 acres, and a spotted owl HRCA is 1,000 acres. CalPeco will coordinate with the USFS to identify areas of interest and understand the desirable components or key criteria of suitable habitat used for PAC and HRCA designation. As an alternative to assisting USFS in locating additional suitable habitat adjacent to a PAC or HRCA, CalPeco will provide monitoring support for new PAC or HRCA areas established by USFS as a result of the project. The specific objectives, timing, and duration of monitoring will be agreed upon by CalPeco and USFS.	This measure is intended to offset permanent impacts to California spotted owl and northern goshawk habitat by providing additional survey efforts in locations chosen in consultation with the USFS or funding for surveys, restoration, or protection of habitat.	✓	✓	✓			
BIO-14	CalPeco will conduct protocol-level surveys for willow flycatcher in the Martis Valley, within suitable habitat that could be affected by project activities associated with segments 650-4, 650-4A, and 650-4B. Suitable habitat	This measure is intended to avoid impacts to nesting willow flycatchers by defining survey locations and appropriate buffer zones.			✓			



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	within 200 feet of these segments is identified in Exhibit 4.7-7. (Additional suitable habitat not shown on Exhibit 4.7-7 is present along Martis Creek adjacent to these segments and may require consideration for surveys.) The survey will follow <i>A Willow Flycatcher Survey Protocol for California</i> (Bombay et al. 2003). The protocol requires a minimum of two survey visits to determine presence or absence of willow flycatcher: one visit during survey period 2 (June 15–25) and one during either survey period 1 (June 1–14) or period 3 (June 26–July 15). This measure is based on willow flycatcher sightings made in 2007 during field surveys to support the PEA, recent CNDDDB records, and habitat mapping conducted during the 2012 surveys. If nesting willow flycatchers are discovered within the survey area, 250-foot exclusionary buffer zones will be established to exclude work during the breeding season—June through August—or until young have fledged the nest. If an area is given clearance to proceed with construction and nesting activities subsequently occur, it will be assumed that the nesting pair is acclimated to the ongoing disturbance of construction. If circumstances exist such that future activities may result in the abandonment or failure of the nest, as determined by a qualified biologist, an appropriate exclusionary buffer will be established by CalPeco, in coordination with the CDFW, to protect nesting birds.							
BIO-15	Preconstruction biological surveys will be conducted no more than 30 days prior to construction activities to identify biological resources, including burrows and den sites, which could be impacted by construction activities. All burrows and den sites will be inspected for use by sensitive mammals, and buffers may be established based on occupation. If an area is given clearance to proceed with construction and burrowing or denning activities subsequently occur, it will be assumed that the individuals	This measure is intended to identify sensitive mammals and burrows in the project area in order to facilitate the implementation of avoidance measures and lessen potential impacts.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	are acclimated to the ongoing disturbance of construction. However, the den will be flagged to prevent damage during construction. If circumstances exist such that future activities may result in the abandonment of the burrow or den site, as determined by a qualified biologist, an appropriate exclusionary buffer will be established by CalPeco, in coordination with CDFW, USFS, and, if necessary, the USFWS.							
BIO-16	If a potentially active sensitive mammal burrow or den site is unavoidable, CalPeco will employ den-dusting or scoping to determine the species and reproductive status of the animal. If the burrow or den is determined to be active and does not contain young, CalPeco will excavate the burrow by hand, remove the den, or block the entrance to prevent re-entry until after the completion of work. If the animal is determined to be raising young, CalPeco will establish a 200-foot exclusionary buffer surrounding the burrow or den until it is determined that the young have left the den. After it is determined that young have left the den, CalPeco will commence hand excavation or removal of the den structure. CalPeco will contact CDFW, USFS and/or USACE prior to any den-dusting, scoping, burrow excavation, or den structure removal.	The measure would protect sensitive young mammals in active burrows through the implementation of appropriate exclusionary buffers around the burrows. The measure also requires that any burrows (not containing young) are excavated so that animals are not harmed during construction activities.	✓	✓	✓	✓	✓	✓
BIO-17	Concurrent with the preconstruction surveys described in APM BIO-15, surveys will be conducted for amphibians, including eggs or juveniles, at aquatic habitat crossed by the project. If adults, juveniles, or eggs of sensitive amphibians are discovered, a permitted specialist will relocate the individuals to suitable habitat outside of the construction area. If amphibians are discovered in the construction area after the start of work, the environmental monitor will allow the individuals to leave under their own volition. As an alternative, an agency-approved biologist may relocate the individuals from the	This measure is intended to identify sensitive amphibians in the project area so that they can be relocated or allowed to leave construction areas unharmed. The measure also calls for appropriate agency coordination in the event of a required relocation.	✓	✓	✓	✓	✓	

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	project area to similar, suitable habitat. CalPeco will coordinate with the CDFG, USFWS, USFS, and/or USACE prior to relocating any individuals. If it is determined that surveys would have potential to result in harassment or other forms of take of a federally listed species (e.g., Sierra Nevada yellow-legged frog), survey and potential relocation methods will be coordinated with and authorized by USFWS.							
BIO-18	For bird species not specifically addressed in other APMs, nesting bird surveys will be conducted no more than 30 days prior to construction activities if work is scheduled to occur during the breeding season—March to September. Exclusionary buffer zones (to be determined based on species-specific needs) will be created surrounding any active nests along the project alignment. Buffers will be established by a qualified biologist prior to the start of construction. If an area is given clearance to proceed with construction and nesting subsequently occurs, it will be assumed that the individuals are acclimated to the ongoing disturbance of construction. If circumstances exist such that future activities may result in the abandonment or failure of the nest, as determined by a qualified biologist, an appropriate exclusionary buffer will be established by CalPeco in coordination with the CDFW, USFS, and/or USACE.	This measure is intended to identify and protect nesting birds during the avian breeding season, thus complying with state endangered species and migratory bird protection laws and lessening any impact.	✓	✓	✓	✓	✓	
BIO-19	Power poles will be constructed to conform to the practices described in the Suggested Practices for Avian Protection on Power Lines Manual developed by the Avian Power Line Interaction Committee (2006).	This measure is intended to help prevent accidental injury or mortality of avian species, which could occur from electrocution.	✓	✓	✓	✓	✓	✓
BIO-20	Bat surveys will be conducted in the spring, no more than 30 days prior to the start of construction, in order to identify active bat roosting sites, such as snags or dense trees. All potential roosting sites will be surveyed by a qualified biologist in order to determine usage. Specific survey methodologies will be determined in coordination with	This measure is intended to avoid potential impacts to bats and bat roosting sites in the project area. By conducting preconstruction bat surveys in the appropriate season, active bat roosting sites would be identified and could be protected through the implementation of this measure.	✓	✓	✓	✓	✓	



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	CDFW and the appropriate land manager (e.g., USFS, USACE). All non-active roosting sites will be trimmed within 30 days of the surveys in order to prevent new roosts from being established. If it is determined that an active roosting site will be impacted, CalPeco will consult with CDFW, USFS and/or USACE in order to acquire appropriate authorizations to remove the roosting sites. All active non-maternity roosting sites will be fitted with passive exclusion devices, such as one-way doors, and all bats will be allowed to leave voluntarily. Once it is confirmed that all bats have left the roost, crews will be allowed to continue work in the area. If a maternity roosting site is discovered, CalPeco will consult with the CDFW, USFS and/or USACE in order to establish appropriate exclusionary buffers until all young are determined to be volant by a qualified biologist. Once it is determined that all young are volant, passive exclusion devices will be installed and all bats will be allowed to leave voluntarily. Once it is determined by a qualified biologist that all bats have left the roost, crews will be allowed to work within the buffer zone.							
BIO-21	Qualified environmental monitors will be present with each crew during all vegetation-removal activities to help ensure that impacts to biological resources are minimized to the extent possible. For all other construction activities, monitors will be allowed to cover up to 5 miles of the project area at once to allow multiple crews to work in close proximity to each other at the same time. Environmental monitors will have the authority to stop work or direct work in order to help ensure the protection of resources and compliance with all permits.	The highest potential of encountering sensitive species occurs during initial clearing and vegetation removal. This measure specifies the appropriate coverage area for the environmental monitors. The measure is intended to place a qualified biologist with each clearing crew to prevent accidental harm or take of sensitive species and promote compliance with project permits.	✓	✓	✓	✓	✓	

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
BIO-22	An environmental monitor will inspect all pole excavations and areas of active construction on a daily basis for trapped wildlife. Wildlife found in active construction areas will be allowed to passively leave the site. If necessary, wildlife may be relocated by a qualified biologist. The construction foreman will notify the environmental monitor immediately if any wildlife enters or becomes trapped in the work area.	This measure is intended to minimize wildlife entrapment in open excavations or trenches. This measure is also intended to help ensure that in the event that wildlife does inadvertently enter construction areas, individuals would be allowed to passively escape. Further, should an animal fail to escape on its own, this measure provides that qualified individuals would remove the animal unharmed.	✓	✓	✓	✓	✓	✓
BIO-23	Topsoil, where present, will be salvaged in areas that will be graded or excavated. Topsoil will be segregated, stockpiled separately from subsoil, and covered. These soil stockpiles, as well as any others created by the proposed project, shall have the proper erosion control measures applied until they are removed. The topsoil will then be replaced to the approximate location of its removal after project construction has been completed to facilitate revegetation of disturbed areas. Top soil will not be salvaged from areas infested with invasive plants.	This measure would facilitate restoration and revegetation of disturbed areas and help ensure that topsoil is not lost or mixed with subsoil. This measure would help prevent the accidental spread of invasive plants into new areas where they do not currently exist.	✓	✓	✓	✓	✓	
BIO-24	If invasive plant infestations are later identified throughout the course of construction in staging areas, parking areas, or access routes, they will be treated according to APM BIO-4 & BIO-8.	This measure would help prevent the accidental spread of invasive plants into new areas where they do not currently exist.	✓	✓	✓	✓	✓	
BIO-25	If the environmental monitor determines that construction is occurring in an active mule deer fawning area, they will have the authority to temporarily halt or relocate work until the fawns move out of the project area. In addition, helicopter flight paths may be rerouted to avoid these areas if it is determined that helicopter use may impact fawns.	This measure is intended to avoid impacts to mule deer and mule deer fawns that might be sensitive to construction activity and helicopter noise.	✓	✓	✓			
BIO-26	Work areas will be clearly marked with fencing, staking, flagging, or another appropriate material. All project personnel and equipment will be confined to delineated work areas. In the event that work must occur outside of	Clearly delineating work areas and requiring activities to be performed only in the designated areas would minimize impacts to sensitive habitat and species located outside of the work areas, and	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	the work area, approval from lead and other agencies with jurisdiction over the property will be obtained prior to the commencement of activities.	would limit the project's overall disturbance.						
BIO-27	Helicopters will be used, where necessary, to avoid impacts to waterways or in areas of rough terrain. Appropriate measures, including regular watering, will be implemented at landing zones in order to control dust. Helicopter use within HRCAs, PACs, and TRPA disturbance zones will be prohibited if vegetation treatment restrictions are concurrently in place.	Using helicopters near waterways or in areas of rough terrain would protect habitat and eliminate the need to grade new access roads in those areas. Because helicopter use has the potential to increase fugitive dust, the dust control techniques identified in this measure would be implemented. Because helicopter-related noise also has the potential to impact nesting northern goshawk and California spotted owl, use within PACs and HRCAs may be limited.	✓	✓	✓	✓	✓	
BIO-28	CalPeco will minimize vegetation and tree removal to only the areas necessary for construction, with particular attention given to minimizing effects on riparian areas and preserving trees greater than 30 inches diameter at breast height (dbh).	This measure would minimize impacts to habitat, particularly in sensitive riparian areas.	✓	✓	✓	✓	✓	
BIO-29	Skidding of trees will not be permitted in waters of the United States or waters of the State, including wetlands. Within these waters tree removal may be conducted by hand, use of cable systems, helicopter yarding, or use of ground based equipment when determined suitable for ground based mechanical harvest. Any work conducted in the vicinity of waters of the United States, waters of the State, and wetlands will have an environmental monitor present, consistent with the requirements of APM WQ-4. Other APMs applicable to the protection of aquatic resources will also be implemented.	This measure would reduce potential temporary impacts to aquatic resources and existing drainage patterns during construction.	✓	✓	✓	✓	✓	
BIO-30	Prior to commencing construction in any area containing aquatic resources or potential wetlands, a qualified biologist will conduct a delineation of waters of the United States according to methods established in the USACE	Temporary impacts to wetlands, aquatic resources, and existing drainage patterns would be minimized and avoided during construction as a result of this measure. This measure would also help ensure that	✓	✓	✓	✓	✓	



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	wetlands delineation manual (Environmental Laboratories 1987) and Western Mountains, Valleys, and Coast Region Supplement (Environmental Laboratories 2010). The delineation will map and quantify the acreage of all aquatic habitats on the project site and will be submitted to USACE for verification. CalPeco will determine, based on the verified wetland delineation and the project design plan, the acreage of impacts on waters of the United States and waters of the state that will result from project implementation. Impacts will be avoided to the extent practicable through the siting of poles and other facilities outside of delineated waters of the United States and waters of the state. Work in wetlands or wet meadow habitats with saturated soil conditions will be scheduled when soils are dry to the extent possible. If soils become saturated, timber mats will be installed along all vehicle and equipment access routes to minimize rutting. Prior to disturbance of waters of the United States or waters of the state, an environmental monitor will record via photographs and field notes the pre-disturbance condition of the water. Disturbed waters will be restored to preconstruction conditions and seeded with a native species, consistent with the vegetation community present prior to disturbance, to stabilize the soils and minimize the introduction of invasive plants, as specified by the USACE and RWQCB. In accordance with the USACE "no net loss" policy, all permanent wetland impacts will be mitigated at a minimum of a 1:1 ratio. This mitigation will come in the form of either contributions to a USACE-approved wetland mitigation bank or through the development of a Compensatory Mitigation and Monitoring Plan aimed at creating or restoring wetlands in the surrounding area (although creation is not authorized by TRPA in their jurisdiction).	there is no permanent net loss of waters of the United States upon completion of the project. This measure also requires that disturbed wetlands are restored per RWQCB and USACE specifications.						

Table 3-8 Applicant Proposed Measures								
APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New	Line			
BIO-31	Visibility permitting, all excavations will be inspected for sensitive aquatic wildlife prior to dewatering. Wildlife found in excavations will be allowed to leave passively or will be relocated by a qualified biologist.	This measure is intended to prevent mortality of sensitive species due to the use of dewatering pumps and other machinery. This measure also requires that, in the event that wildlife inadvertently enters an excavation and is unable to escape passively, a qualified individual would remove the animal.	✓	✓	✓	✓	✓	✓
BIO-32	If dewatering of an excavation is needed, all dewatering pump intakes will be fitted with filter screening to prevent impacts to aquatic wildlife that may accidentally enter excavations. Water will not be pumped directly from rivers, streams, ponds, or other waters of the U.S. or wetlands (although as stated above, dewatering of excavations is permitted).	Installation of dewatering pump intake screens would help ensure that aquatic wildlife are not harmed during dewatering of excavations. Prohibitions on pumping water from rivers, streams, ponds and similar features would prevent the accidental entrainment of aquatic wildlife in pumps.	✓	✓	✓	✓	✓	✓
BIO-33	All trash and food will be removed from the site at the end of each workday in order to deter wildlife from entering the site.	This measure is intended to prevent attracting wildlife to the project area.	✓	✓	✓	✓	✓	✓
BIO-34	No pets or firearms will be allowed in the project area.	This measure is intended to prevent hunting, accidental injury, harassment, or killing of native and sensitive wildlife.	✓	✓	✓	✓	✓	✓
BIO-35	No harm, harassment, or collection of plant and wildlife species will be allowed. Feeding of wildlife will be prohibited.	This measure is intended to avoid impacts to sensitive plant and animal species.	✓	✓	✓	✓	✓	✓
BIO-36	Prior to construction, CalPeco will develop a Restoration Plan that will address final clean-up, stabilization, and revegetation procedures for areas disturbed by the project. The plan will be consistent with, and implement related commitments and requirements included in the EIS/EIS/EIR project description, other APMs, mitigation measures, and agency permit requirements. The Restoration Plan will address loosening of any compacted soil, restoration of surface residue, and reseeded. If existing unpaved roads require modification to temporarily	Development and implementation of a Restoration Plan would help ensure that landowners and agencies are consulted regarding restoration, that the project area is returned to preconstruction conditions, and that long-term restoration procedures are identified.	✓	✓	✓	✓	✓	

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	allow passage of construction equipment during the construction period, these roads will be returned to their original footprint after construction is complete. On NFS lands, restoration activities will be designed and implemented to meet invasive plant management guidelines and Visual Quality Objectives (VQO) for the area. Areas temporarily disturbed by cut and fill activities will be re-graded to blend with the natural topography. On public land, CalPeco will coordinate with the land management agency to determine an appropriate seed mix or tree planting plan as well as other elements of the plan applicable to lands managed by the agency. On private land, CalPeco will coordinate with the landowner and/or provide the landowner with a suggested seed mix based on consultation with the agency of jurisdiction. The plan will include approved seed mixes, application rates, application methods, methods to record pre-disturbance conditions, success criteria for vegetation growth, monitoring and reporting protocols, and remedial measures if success criteria are not met. If broadcast seeding is determined to be the most feasible application method, seeding rates will be doubled relative to the standard seeding rate and the seeding method rationale will be explained. The plan will also include long-term erosion and sediment control measures, slope stabilization measures, criteria to determine the success of these measures, remedial actions if success criteria are not met, and monitoring and reporting procedures. As part of normal equipment inspections during project operation, an evaluation of access ways will be conducted to confirm that use has not resulted in compaction that will result in "coverage" per TRPA standards.							
BIO-37	Decommissioning the existing 625 Line ROW and allowing natural regeneration of coniferous forest and other native	Revegetation along the existing 625 Line would partially offset the impacts to habitat and species as	✓					



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
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			Existing	New				
	<p>vegetation types will assist in offsetting or reducing the permanent loss of trees and other vegetation along the new 625 Line ROW. Prior to the removal of poles and conductor, a qualified biologist or soil scientist will identify areas of the abandoned ROW that contain unnaturally compacted soil (resulting from unauthorized public use, development of user-created trails, or other factors) that could limit the natural reestablishment of vegetation and assess whether local treatments will be needed to facilitate native vegetation recruitment and development. CalPeco will consult with the applicable land owner/manager to verify that areas identified for treatments are appropriate (e.g., not part of a system road, authorized trail network, or other desired use) and secure approval for restoration. Restoration of these sites will be overseen by a qualified biologist and will likely consist of a combination of the following.</p> <ul style="list-style-type: none"> <li>/// Barricade existing access points and post appropriate signage to discourage use. Also incorporate into restoration actions minimizing the visibility of potential access points from intersecting roadways.</li> <li>/// Loosen compacted soil to a depth of 6 to 8 inches.</li> <li>/// Incorporate logs, boulders, mulch and other materials into the disturbed area to discourage use.</li> <li>/// Apply appropriate erosion control BMPs (e.g., installation of check dams, mulch, log and/or rock stabilization) in areas where evidence of sheet, rill, or gully erosion exists.</li> <li>/// Seed with a certified weed-free seed mix, approved by the applicable land owner/manager, containing native, site-appropriate species.</li> <li>/// Apply 1 to 2 inches of locally obtained mulch such</li> </ul>	a result of the tree removal associated with the new 625 Line.						

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	<p>as pine needles, wood chips, or tub grindings.</p> <ul style="list-style-type: none"> <li>Monitor for new invasive plant invasions and expansion of existing weed populations following treatments, and implement weed control measures where needed. Post-treatment monitoring for invasive plants will be conducted annually for up to three years, similar to the frequency and duration specified for USFS land in the USFS Invasive Plant Risk Assessment prepared for the project.</li> <li>Conduct post-treatment monitoring and reporting every two years for up to 10 years, to evaluate success of restoration treatments. The details of the monitoring and reporting program, including identification and implementation of potential adaptive management actions based on monitoring results, will be developed jointly by CalPeco, TRPA, and the land owner/manager.</li> </ul>							
<b>Cultural Resources</b>								
CUL-1	To the extent feasible, project design will avoid disturbance to significant heritage and cultural resources recommended or considered eligible for listing in the NRHP or CRHR. Avoidance may be achieved by various means such as placing poles outside the resource and spanning conductor across the resource and adjusting access way boundaries to avoid a resource. Resources to be avoided within the APE, or those immediately adjacent to the APE, will be designated as exclusion zones for all construction activity, including tree removal, and will be clearly marked with fencing, staking, flagging, or another appropriate material. Signage will be placed on the markers identifying the exclusion zone and stating that construction vehicles, equipment, and personnel are not	This measure documents the applicant's intent to avoid cultural resources where possible.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	permitted in the exclusion zone. If complete avoidance is not feasible, construction and/or tree removal methods will be implemented that minimize potential impacts, such as hand excavating holes with an archeological monitor present to inspect spoils and using a helicopter for pole placement to avoid vehicles passing over the resource. Appropriate construction methods for each situation will be developed in coordination with a qualified archeologist, the land owner/manager, relevant federal or state agencies, and Native American representatives if a Native American site.							
CUL-2	The proposed Northstar Golf Course Staging Area is located adjacent to a known heritage and cultural resources site considered eligible for listing in the NRHP or CRHR. If needed, the boundary of the staging area will be adjusted to provide at least a 10-foot buffer between the edge of the staging area and the identified edge of the resource site. A temporary barrier such as a fence or K-rail will be installed at the edge of the staging area adjacent to the resource site. Signage will be placed on the barrier identifying the exclusion zone and stating that construction vehicles, equipment, and personnel are not permitted in the exclusion zone.	This measure stipulates avoidance techniques so that potential impacts to a known cultural resource would be avoided.						✓
CUL-3	If impacts to known, unevaluated archaeological resources cannot be avoided, a detailed test excavation plan and research design that follows the Secretary of the Interior's standards and guidelines will be developed to evaluate the sites that will be impacted. The plan and research design will be provided to the relevant federal or state agencies and the SHPO for review and approval before implementation. If such sites are determined ineligible for National Register or California Register listing (with concurrence from the SHPO), the sites will require no further consideration. If any of the tested resources are determined eligible to either register	If unevaluated archaeological resources could not be avoided, this measure requires that they are evaluated per the Secretary of Interior's standards and guidelines, and in coordination with the SHPO. This measure also defines the procedures to follow for both eligible and ineligible sites, and requires the SHPO's concurrence with the determination.	✓	✓	✓	✓	✓	✓



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	(with SHPO concurrence), a detailed data recovery plan will be developed for those parts of the resources that would be damaged or destroyed by the project, and provided to the relevant federal or state agencies and the SHPO for review and approval. Results of test excavations and data recovery will also be provided to Tribal representatives. Data recovery excavations may be sufficient to reduce impacts to the resources to the less-than-significant level.							
CUL-4	If impacts to historic-era resources cannot be avoided during project activities, the resources will be evaluated by a qualified historical archaeologist in coordination with relevant federal or state agencies. If the resources are determined ineligible for National Register or California Register listing (with SHPO concurrence), the resources will require no further consideration. If any of the resources are determined eligible to either register (with SHPO concurrence), a detailed treatment plan will be developed for those resources, and provided to the relevant federal or state agencies and SHPO for review and approval. Treatment may include additional archival research and/or field recordation	Several identified historic-era resources require more detailed analysis if they could not be avoided. This measure requires a detailed treatment plan for those resources that are determined to be eligible for listing on historic registers.		✓	✓	✓	✓	
CUL-5	As outlined at 36 CFR part 800, the implementing regulations of Section 106 of the NHPA, if NRHP-eligible heritage and cultural resources will be adversely affected by a proposed undertaking, a Memorandum of Agreement (MOA) or Programmatic Agreement (PA) will be developed and signed by appropriate parties (i.e., the LTBMU, Tahoe National Forest, USACE, ACHP, California SHPO, CPUC, interested tribes, local governments, and other parties) to identify appropriate treatment measures and implement procedures for mitigating adverse effects to the resources. If it is determined that the NRHP-eligible resources cannot be avoided or preserved in place through identification of construction exclusion zones, through route/project re-	Implementation of this measure would reduce potential impacts to NRHP-eligible heritage and cultural resources.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	design, or capping an archaeological site with soil, mitigative treatment may include data recovery, archival research, and/or field recordation consistent with APMs CUL-3 and CUL-4, excavation as mitigation (data recovery restricted to the parts of the resource that would be damaged or destroyed by the project), archaeological monitoring during construction, Tribal monitoring, a plan for unanticipated discoveries, curation, reporting, or similar measures. Compliance with the requirements of Section 106 of the NHPA will also result in compliance with Chapter 67 Resource Protection of the TRPA Code of Ordinances, including Section 67.3.3 Resource Protection Plan.							
CUL-6	CalPeco will ensure completion of heritage and cultural resources survey of all areas within the ultimate project APE of the selected alternative that have not already been surveyed, such as property where access was not previously available, future minor changes in the alignment of the power line and access roads or the location of other components that may be proposed because of engineering constraints, the need to avoid other sensitive resources, and other considerations. Each of these unsurveyed areas will be added to the project's APE as appropriate, and will be intensively surveyed prior to ground disturbance to document and record the presence or absence of heritage and cultural resources. The work may require preparation of a supplemental inventory report for review and approval by the relevant federal or state agencies. Where landowners may legally limit the ability to conduct surveys, the survey area may be restricted to only the area of ground disturbance, or other accommodations made in coordination with lead agencies participating in the Section 106 process (e.g., intensive monitoring during ground disturbance).  Prior to any tree removal activities associated with project	Implementation of this APM would help ensure proper identification and recordation of heritage and cultural resources within the APE prior to the start of construction ground-disturbing activities.  Should tree removal be required outside of the APE, this measure requires that the area is surveyed for cultural resources so that known cultural resources are avoided. In the event that unevaluated resources cannot be avoided, this measure requires their proper evaluation and treatment.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	construction that occur outside of the APE in which cultural resources surveys have been completed, a cultural resources survey of the area will be performed by a professional archaeologist to help ensure no known resources would be impacted. If cultural resources are discovered, they will be treated consistent with the requirements of other applicable APMs.							
CUL-7	<p>CalPeco will design and, with agency approval, implement a Worker Environmental Awareness Program (WEAP) that will be provided to all construction personnel and supervisors who will have the potential to encounter and alter heritage and cultural resources. The topics to be addressed in the WEAP will include, at a minimum:</p> <ul style="list-style-type: none"> <li>/// types of heritage and cultural resources expected in the project area;</li> <li>/// types of evidence that indicates heritage or cultural resources might be present (e.g., ceramic shards, trash scatters, lithic scatters);</li> <li>/// roles and responsibilities of the construction monitors;</li> <li>/// importance of avoiding areas flagged or otherwise identified as sensitive;</li> <li>/// what to do if a worker encounters a possible resource;</li> <li>/// what to do if a worker encounters bones or possible bones; and</li> <li>/// penalties for removing or intentionally disturbing heritage and cultural resources, such as those identified in the Archeological Resources Protection Act (ARPA).</li> </ul>	Implementation of this mitigation measure would assist in reducing potential project impacts by ensuring construction workers are educated about site protection requirements.	✓	✓	✓	✓	✓	✓
CUL-8	Prior to construction, CalPeco will prepare for agency approval a Construction Monitoring and Unanticipated	Implementation of this measure would help to ensure that actions taken by field personnel are	✓	✓	✓	✓	✓	✓



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	Discovery Plan that will present, in detail, procedures to be implemented during construction (e.g., numbers of archaeological and Native American monitors, the qualifications of monitors [expertise in Washoe cultural resources], buffer zones, work stoppage guidelines). At a minimum, if a potential heritage or cultural resources is discovered, construction will be halted within 50-feet of the site until a qualified archeologist can evaluate the find. If the archeologist can determine at the time that the find would not be eligible for the NRHP or CRHR and does not contain human remains, construction may proceed after the find is properly documented and/or collected. Otherwise, applicable elements of other APMs will be implemented. The Construction Monitoring and Unanticipated Discovery Plan will also discuss procedures for immediate work stoppage and treatment in the event of discovery of human remains during construction activities.	compliant with the measure in this document and applicable regulations.						
CUL-9	If human remains are discovered, all work within 50 feet of the discovery site will halt immediately. CalPeco will notify the County Coroner, as stipulated in Section 7050.5 of the HSC. The Coroner will determine whether the remains are Native American and, if so, will contact the NAHC by telephone within 24 hours. The commission will follow the stipulations in Section 5097.98 of the PRC, including notification of those persons it believes to be most likely descended from the deceased Native American. If the commission is unable to identify a descendant, the descendant is unable to make a recommendation, or the landowner rejects the recommendation, the NAHC will mediate any dispute between the parties. Where such mediation fails to provide measures acceptable to the landowner, the landowner shall reinter the human remains and associated funerary items with appropriate dignity on the property, in a location not subject to further	The measure would help ensure that human remains encountered during construction are treated in consistence with applicable laws and regulations.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	subsurface disturbance. If human remains are discovered on federally managed lands, the provisions of NAGPRA will apply. For NAGPRA-associated discoveries, it may be necessary to provide 24-hour, onsite security.							
CUL-10	The WEAP prepared for other resources will also address the identification and appropriate treatment of potential fossil finds. If fossils or other paleontological resources are encountered during construction, all work will be halted within a 30-foot radius of the find and a qualified paleontologist will be contacted to examine the find and evaluate its significance. If the find is deemed to have scientific value, the paleontologist and CalPeco will formulate a plan to either avoid impacts or to continue construction without disturbing the integrity of the find (e.g., by carefully excavating the material containing the resources under the direction of the paleontologist followed by routine conservation, laboratory preparation, and curation).	The measure would help ensure that impacts to paleontological resources encountered during construction are avoided or the resources are properly evaluated and/or recovered by a qualified individual.	✓	✓	✓	✓	✓	✓
<b>Geology, Soils, and Seismicity</b>								
SOILS-1	Sediment control structures, such as silt fencing, coir logs, wattles, straw mulch, and straw bale check dams will be installed, as appropriate and effective given the situation, to contain sediment within construction work areas and staging areas. Where soils and slopes exhibit high erosion potential, additional sediment control structures, such as erosion control blankets, matting, and other fabrics may be installed. Implementation and maintenance of these BMPs and any others identified in the SWPPP will be monitored by a qualified environmental monitor to ensure effectiveness. In addition, a winterization plan will be prepared and incorporated into the SWPPP addressing erosion and sediment management on the project site during the winter months. Implementation, monitoring,	This measure would control erosion that could occur as a result of construction and complement implementation of required plans.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	and maintenance of BMPs will be adjusted accordingly during the winter months consistent with the winterization plan.							
SOILS-2	<p>A California Registered Professional Geologist or a California Registered Civil or Geotechnical Engineer will conduct a geotechnical analysis and prepare a Geotechnical Engineering Report that will be used to develop the final design of all project components (access ways, staging areas, substations stations, and poles) in order to avoid or minimize damage related to geologic hazards, including seismic activity, slope stability, and soil limitations (expansive and unstable soils) and to ensure that all applicable codes and seismic standards are adequately addressed in the design and construction of the project. The report will address and make recommendations on the following:</p> <ul style="list-style-type: none"> <li>/// Access way and road design;</li> <li>/// Structural foundations;</li> <li>/// Grading practices;</li> <li>/// Erosion/winterization;</li> <li>/// Special problems discovered on-site (i.e., groundwater, expansive/unstable soils, etc.);</li> <li>/// Slope stability; and</li> <li>/// Post-construction restoration.</li> </ul> <p>The Geotechnical Engineering Report will also incorporate construction standards required by the CPUC and standards recommended by the Institute of Electrical and Electronics Engineers (IEEE 693), "Recommended Practice for Seismic Design of Substations." The final design will be reviewed and approved by a Professional Engineer registered in the State of California prior to construction. The Geotechnical Report will be provided to the lead</p>	This measure helps ensure that site-specific conditions are considered in the final design of the project and requires documentation from a Professional Engineer that the project design meets all applicable regulations and safety standards.	✓	✓	✓	✓	✓	✓



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	agencies. It is the responsibility of the applicant to provide for engineering inspection and certification that earthwork has been performed in conformity with the recommendations contained in the report.							
<b>Hazards and Hazardous Materials</b>								
HAZ-1	Prior to construction, all CalPeco, contractor, and subcontractor project personnel will receive training regarding the appropriate work practices necessary to effectively implement the APMs to comply with the applicable environmental laws and regulations associated with hazardous materials.	This measure would reduce the potential of an accidental release of hazardous materials, promotes proper clean-up and handling of spilled material, and reduces unnecessary exposure of hazardous materials to workers and the public by training project personnel on appropriate work practices.	✓	✓	✓	✓	✓	✓
HAZ-2	Prior to the ground disturbance at the Brockway Substation parcel, if disturbance is determined to be necessary, a Phase I environmental site assessment (ESA) will be conducted for the site to determine if there is any surface or subsurface contamination. Recommendations included in the Phase I ESA will be implemented. If hazardous materials are identified, recommendations could include, but would not be limited to, a Phase II ESA and/or cleanup of known identified hazardous wastes. If contamination is found to be present, remediation will occur in accordance with all applicable federal, state, and local regulations.	Phase I and Phase II ESAs would help ensure that future use of the Brockway Substation parcel would not result in a significant hazard to the public or the environment from unknown contaminated soils.						✓ <sup>3</sup>
HAZ-3	During the Brockway Substation decommissioning process, the existing equipment to be removed will be tested in accordance with federal, state, and local standards to determine appropriate recycle, reuse, or disposal alternatives.	This measure would help ensures that workers and the public would not be exposed to hazardous materials, such as asbestos or lead, during the decommissioning and removal of the Brockway Substation. In addition, it requires the recycling or						✓ <sup>3</sup>

<sup>3</sup> HAZ-2 and HAZ-3 apply only to the Brockway Substation.

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
		reuse of materials where feasible.						
HAZ-4	CalPeco will coordinate with the Truckee-Tahoe Airport Land Use Commission (ALUC) to obtain approval of the height increase for the 132/650 Line double-circuit and the 650 Line to help ensure that the project will not create a new airport hazard in accordance with the Truckee-Tahoe ALUC Plan.	The measure requires coordination, communication, and approval of the height increase for the 132/650 Line double-circuit and the 650 Line, so that the project would not conflict with the Truckee-Tahoe ALUC Plan and that an airport safety hazard would not result.			✓	✓		
HAZ-5	Prior to construction, CalPeco will prepare a Fire Suppression and Prevention Plan that will discuss necessary fire equipment to be stored at the project staging areas, appropriate protective wear, preconstruction and construction fire prevention measures, fire-fighting methods, and notification procedures in the event of a fire. This plan will be submitted to the USFS and/or TRPA, or other applicable land management agency for review and approval prior to the start of construction.	This measure would reduce the potential to start a wildland fire during construction of the project.	✓	✓	✓	✓	✓	✓
HAZ-6	Smoking will only be allowed in designated cleared areas or enclosed vehicles to reduce the potential for wildfires.	This measure would reduce the potential to start a wildland fire during construction of the project.	✓	✓	✓	✓	✓	✓
<b>Hydrology and Water Quality</b>								
WQ-1	All refueling will be conducted at least 100 feet away from waterways, within designated refueling stations. If refueling within 100 feet of a waterway or RCA is unavoidable, CalPeco will require that spill kits are on site, install secondary containment to control accidental spills, and notify an environmental monitor prior to fueling. Environmental monitors will regularly inspect refueling areas to help ensure that proper measures are being implemented in accordance with the project's SWPPP and Spill Prevention, Control and Countermeasure (SPCC) Plan.	This measure would help ensure that impacts to waterways as a result of accidental spills would be avoided during the refueling of equipment. It includes inspections to address proper implementation and compliance with the SWPPP and SPCC Plan.	✓	✓	✓	✓	✓	✓
WQ-2	All concrete washouts will be conducted either into excavations where the concrete was poured, within	Because the use of concrete near aquatic resources has the potential to affect water quality by	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	designated concrete washout areas, or will be captured using a washout-recycling system. Crews will not be allowed to dispose of concrete directly onto the ground.	increasing the pH levels, this measure requires proper handling and disposal of concrete so that it would not contribute to water quality degradation.						
WQ-3	Where feasible (e.g., landowner approval is provided, sufficient space with permeable surfaces is available, slopes are gentle enough to allow control of potential sediment transport), all stormwater or groundwater removed from excavations will be discharged overland into well-vegetated areas to promote the settling of sediment. If overland discharge is not possible, then water removed from excavations will be collected, treated, and disposed of consistent with requirements of the Lahontan Regional Water Quality Control Board and any other agencies with jurisdiction over the activity.	This measure would help ensure that dewatering activities would not increase the potential for sedimentation and degradation of aquatic resources.	✓	✓	✓	✓	✓	✓
WQ-4	When working near aquatic resources, poles and trees will be cut by hand and felled away from such features (unless there is an ecological reason to do otherwise that is approved by applicable regulatory agencies, such as adding coarse woody debris to a stream to enhance fish habitat). The skidding of poles and trees through aquatic resources will not be permitted. Within Stream Environment Zones (SEZs) poles and trees will be removed by hand, by cable system, or by helicopter. No mastication will occur in SEZs and no chip material will be left in SEZs unless approved for erosion control. Vehicles and equipment will be staged away from aquatic features, along designated access routes or within staging areas. If there are circumstances where disturbance to the bank or channel of an aquatic feature is unavoidable, CalPeco will restore the banks and channels to preconstruction conditions immediately afterwards. An environmental monitor will be present in all instances where disturbance to an aquatic feature may occur to ensure conditions of this APM and any other applicable APMs, permit conditions, and mitigation	This measure would reduce potential temporary impacts to aquatic resources and existing drainage patterns during construction by mandating avoidance and/or restoration of the resources. By requiring the presence of an environmental monitor, CalPeco would help ensure that impacts are avoided where possible, that activities are documented, and that these features are adequately restored.	✓	✓	✓	✓	✓	



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	measures are complied with.							
WQ-5	When construction activities are required adjacent to flowing streams or rivers, work will be conducted during low-flow conditions (i.e., when surface flow is restricted to the low-flow channel, as confirmed by the environmental monitor).	This measure would minimize potential water quality impacts from sedimentation and erosion that could occur if work is conducted within close proximity to flowing waterbodies. In low-flow conditions, the distance between the water and the work area would increase, thereby reducing the potential for water quality degradation.	✓	✓	✓	✓	✓	
WQ-6	<p>In areas where topsoil has not been salvaged, construction activities will be limited when the environmental monitor determines that the soil is too wet to adequately support vehicles and equipment. Where soil conditions are deemed too wet to work, one of the following measures will apply.</p> <ul style="list-style-type: none"> <li>Access will be limited to the minimum area feasible for construction. Where possible, vehicles and equipment will be routed around wet areas so long as the re-route does not cross into sensitive resource areas.</li> <li>If wet areas cannot be avoided and soil moisture is too high to strip topsoil, BMPs, including the use of wide-track or low ground pressure equipment or installation of prefabricated equipment pads or timber mats, will be implemented for use in these areas to minimize rutting and off-site sedimentation.</li> </ul>	The measure would minimize rutting and associated damage to topsoil.	✓	✓	✓	✓	✓	✓
WQ-7	CalPeco will minimize vehicle and equipment usage within and crossing of stream channels and other aquatic resources consistent with the requirements of other APMs. If vehicles and equipment must cross stream channels or other aquatic resources, CalPeco will construct shoo-fly access roads, install culvert crossings, or use other methods to access either side of the resource or utilize existing	This measure would minimize impacts to aquatic resources and water quality by avoiding stream channels and other aquatic resources whenever possible. If aquatic resources could not be avoided, this measure would help ensure that temporary impacts from project construction would not substantially alter existing drainage patterns.	✓	✓	✓	✓	✓	

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	bridges, where feasible, in order to minimize the need to install temporary bridges. Limit crossings to no more than one for every 800 feet of channel. If there are no existing crossings and the construction of shoo-fly roads or other crossing methods may cause greater resource impact, CalPeco will install timber mats, slash mats, or other materials suitable for a temporary bridge. If bridges are installed over streams with discernible flow, all attempts will be made to span the channel. Temporary crossings on ephemeral or intermittent drainages will be constructed and removed, to the maximum extent feasible, when the channels are dry and will be removed before the winter season begins. These crossings will be designed to not obstruct water flow and fish passage and to accommodate flows from a 1 inch or greater precipitation event.							
WQ-8	CalPeco will obtain permits from appropriate regulatory agencies prior to commencing work in waters of the United States or waters of the state. Following construction, CalPeco will restore any impacted waterbodies and wetlands to pre-project conditions and compensate for any permanent wetland impacts in accordance with the US Army Corps of Engineer's "no net loss" policy.	This measure requires that there is no net loss of waters of the United States or waters of the state through restoration of temporarily affected waters and compensation for permanent wetland losses.	✓	✓	✓	✓	✓	
<b>Noise</b>								
NOI-1	CalPeco will provide notice of construction to all property owners within 300 feet of the project by mail at least 1 week prior to the start of construction activities. The announcement will state the construction start date, anticipated completion date, hours of operation, and the project's website where questions can be asked and complaints can be received.	This measure requires proper notice to residents in the vicinity of the project so they can be prepared for the construction activities that would occur nearby. The measure would also provide residents with a process by which they would be able to resolve noise-related issues and assist in ensuring compliance.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
NOI-2	CalPeco will post a telephone number for excessive noise complaints in conspicuous locations in the vicinity of the project site when within 1,000 feet of residences.	The measure would provide residents with a process by which they could notify CalPeco of noise-related issues so that CalPeco could work to resolve any issues.	✓	✓	✓	✓	✓	✓
NOI-3	CalPeco will designate a Disturbance Coordinator, who will be responsible for responding to any local complaints about construction noise. The Disturbance Coordinator will determine the nature of the noise complaint and will propose reasonable measures to correct the problem.	The measure provides residents a process by which they would be able to notify CalPeco of noise-related issues. A designated Disturbance Coordinator would provide a single point of contact for residents for noise-related complaints and issues to be resolved.	✓	✓	✓	✓	✓	✓
NOI-4	Construction activities, including any blasting and helicopter flights, will occur during the times established by local ordinances (and allowing for any exceptions that local agencies and ordinance conditions may provide)—8:00 a.m. to 6:30 p.m. in TRPA jurisdiction, 6:00 a.m. to 8:00 p.m. Monday through Friday and 8:00 a.m. to 8:00 p.m. Saturday and Sunday in Placer County and 7:00 a.m. to 9:00 p.m. Monday through Saturday and 9:00 a.m. to 6:00 p.m. on Sunday in the Town of Truckee—with the exception of certain activities where nighttime construction activities are necessary. These activities include, but are not limited to, the delivery of substation transformers, filling of substation transformers, system transfers, pouring of foundations, and pulling of the conductor across major roadways, which require continuous operation or must be conducted during off-peak hours per agency requirements.	This measure promotes project compliance with the noise regulations contained within Placer County Municipal Code and the Town of Truckee Development Code.	✓	✓	✓	✓	✓	✓
NOI-5	No blasting will occur within 50 feet of any existing building, or within 250 feet of a residence or other occupied structure, or in a location or manner that would be inconsistent with other APMs. If large rock outcroppings need to be removed and are within 50 feet of a building or 250 feet of an occupied structure, alternative methods to blasting, such as silent chemical	This measure helps prevent damage to structures from blasting activities by restricting blasting activities near structures to methods that do not produce vibration.	✓	✓	✓	✓	✓	✓



Table 3-8 Applicant Proposed Measures								
APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	demolition, may be used to break apart and remove the rock.							
NOI-6	All internal combustion-engine driven equipment will be equipped with intake and exhaust mufflers that are in good condition and appropriate for the equipment.	Intake and exhaust mufflers would reduce the overall noise levels associated with construction equipment.	✓	✓	✓	✓	✓	✓
NOI-7	Stationary noise-generating equipment will be located as far as possible from sensitive receptors when they adjoin or are within 1,000 feet of a construction area.	Maximizing the distance between stationary noise-generating equipment (e.g., generators) and sensitive receptors would reduce noise exposure for the receptors.	✓	✓	✓	✓	✓	✓
NOI-8	Quiet air compressors and other stationary equipment will be utilized when possible within the Town of Truckee limits and within developed areas of Tahoe City and Kings Beach.	This measure is intended to comply with the noise regulations contained in the Town of Truckee Development Code as well as minimize noise generation in other communities.				✓		✓
NOI-9	Helicopter flight patterns will be designed to avoid and minimize flights over residential areas to the extent practical.	Minimizing helicopter flights over residential areas would reduce noise exposure for sensitive receptors.	✓	✓	✓	✓	✓	
NOI-10	CalPeco will respond to third-party complaints of audible noise generated by operation of system facilities by investigating the complaints and by implementing feasible and appropriate measures. As a part of CalPeco's repair inspection and maintenance program, the power line will be patrolled and damaged insulators or other power line materials, which could cause interference and result in atypically loud corona noise, would be repaired or replaced.	Regular maintenance and response to noise complaints minimizes the public's exposure to project noise during operation.	✓	✓	✓	✓	✓	✓
NOI-11	Caution will be exercised during construction to try to avoid scratching or nicking the conductor surface, which may provide points for corona generation to occur.	Careful construction methods will minimize the public's exposure to project noise during operation.	✓	✓	✓	✓	✓	✓
<b>Recreation</b>								
REC-1	A public-liaison will be assigned by CalPeco to provide the public with advance notification of construction activities at least 15 days prior to the start of construction activities.	A designated public liaison would help ensure that the public is notified of construction activities and has a point-of-contact for information. The project	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	A project website will be developed for the public to ask questions about the construction process and schedule. Concerns related to dust, noise, odor, trail closures, and access restrictions associated with construction activities will be addressed within this program.	website would further aid in information dissemination regarding any trails or recreational facilities that might be temporarily impacted by the project. This measure would promote public awareness of alternate recreational facilities that would be accessible during any potential closures as a result of construction activities, thus lessening the potential impact of trail closures.						
REC-2	CalPeco will provide the USFS, in the form of an annual construction plan, with advance notice of all construction activities potentially within its jurisdiction and affecting recreation areas and trail systems, including temporary trail closures, within the forest. CalPeco will coordinate with USFS prior to preparation of the plan to avoid conflicts with known, scheduled, permitted events. Such avoidance will be reflected in the annual construction plan. Notification to USFS officials will be provided at least 60 days before construction begins in these areas.	Notifying USFS staff of construction activities in the forest would allow for coordination regarding any regulations or requirements that the USFS may have. USFS staff can also provide the location of and information about potential alternative recreational trails and facilities to the public in order to aid in the implementation of APM REC-3, thus reducing the impact of trail closures upon recreationists.	✓	✓	✓			✓
REC-3	Signs advising recreationists of construction activities and directing them to alternative trails or bikeways will be posted at all trail access points or in locations as determined through coordination with the respective jurisdictional agencies. Signage describing the closures will be posted at trail access points one week prior to closures, will remain posted during the entire closure period, and will be removed upon completion of construction.	The signage at trail access points would notify the public of closures and would suggest potential alternative facilities that can be accessed, thus reducing the impact of trail closures.	✓	✓	✓	✓	✓	
REC-4	Where helicopters will be used for construction, signage advising equestrians of the schedule for helicopter use will be posted at all equestrian trail-access points within the vicinity of the flight paths one week prior to helicopter activity. These signs will be checked and maintained daily until helicopter operation in the area ceases.	Horses are particularly sensitive to helicopter noise. This measure would allow the equestrians to avoid helicopter use areas, thus avoiding potential safety issues and impacts to the enjoyment of the activity.	✓	✓	✓		✓	✓
REC-5	Pulling of conductor over the Truckee River will occur	The peak rafting season is May through September.		✓				

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	during the months of April, October, or November to minimize impacts to rafting operations.	Limiting conductor pulling activities to April, October, or November would reduce impacts to rafting operators and recreational rafters.						
REC-6	CalPeco has agreed at the request of California State Parks to complete construction in the vicinity of Burton Creek State Park with no new access and with limited impact to the existing ROW for an agreed upon section of three poles. Excavation for pole installation in Segment 625-2 between southwest corner of Burton Creek State Park and the southernmost portion of Segment 625-3, where the State Park road meets the Fiberboard Freeway, will be done by hand; pole removal and replacement will be carried out by helicopter. All access ways created for the 625-Line between the end of pavement of the Fiberboard Freeway and the east west alignment of the existing 625 Line alignment in the vicinity of the southwest corner of Burton Creek State Park, will be closed to recreational access to prevent non-State Park system route and trail proliferation. This is an approximately 1,800 foot segment of the proposed 625 Line alignment.	Limiting impacts to the existing ROW in Burton Creek State Park would minimize any potential impact to recreational use of the park. This would be completed by helicopter installation for a span of two to three poles, and has been proposed to limit future recreational travel ways.		✓				

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
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			Existing	New				
REC-7	CalPeco will install access way barriers (e.g., gates where system maintenance and administrative access is anticipated, boulders, logs) and signage along any overland travel ways to minimize the possibility of establishing new recreational paths (both motorized and non-motorized). Other methods to manage recreational use, such as applying layers of mulch to prevent motorized route development, providing wayfinding signage to direct non-motorized use, and using restoration plantings to screen temporary access ways that are no longer used, can also be employed. Temporary access ways that are no longer used will be permanently blocked. These actions will be completed as prescribed under the Construction Operation and Maintenance Plan for the project that will be prepared by the Applicant and approved by the USFS prior to construction.	Placing boulders or gates to block access following construction would limit habitat degradation as a result of unauthorized use of access ways.	✓	✓	✓		✓	
REC-8	Several APMs address management, protection, and restoration of physical conditions in the project construction zone (e.g., APMs SCE-1, BIO-23, BIO-28, BIO-36, SOILS-2). APM BIO-36 specifically calls for development and implementation of a site Restoration Plan. The Restoration Plan developed under APM BIO-36 will also address final clean-up, stabilization, and reconstruction of recreation areas and access points on NFS lands disturbed by the project. The plan will be consistent with, and implement related commitments and requirements included in the EIS/EIS/EIR project description, other APMs, and mitigation measures. The Restoration Plan will address restoration of the recreation facilities to a pre-construction condition, and will be consistent with the USFS Recreation Opportunity Spectrum (ROS) system, Built Environment Image Guide (BEIG), and accessibility requirements. Restoration activities will be sufficient to result in no permanent net loss of recreation facilities or	This APM would prevent permanent net loss of recreation facilities or loss of character to these facilities on NFS lands upon completion of the project.	✓	✓	✓			✓



Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
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			Existing	New				
	loss of character to these facilities on NFS lands upon completion of the project.							
<b>Utilities</b>								
UTL-1	<p>During the project design process, the applicant will coordinate with utility providers in the project area to identify the location of underground facilities in the vicinity of the selected alignment and staging areas. The final excavation and grading plans will avoid existing utilities where possible; and where it is not possible to avoid utilities, the applicant will coordinate with service providers to minimize disturbance. Prior to start of construction, the applicant will verify utility locations through field surveys and use of the Underground Service Alert (USA) services. Any buried utility lines will be clearly marked in construction areas.</p> <p>Prior to start of construction, the applicant will prepare a response plan to provide procedures to be followed in the event of accidental damage to a utility line. The plan will identify chain-of-command rules for notifying authorities and appropriate actions and responsibilities for ensuring the safety of the public and workers. Worker education training in response to such events will be conducted by the contractor.</p> <p>The applicant will provide adequate notice to utilities and affected customers of planned service disruptions associated with transmission line construction activities.</p>	This would minimize adverse impacts area resident and local businesses from utility service interruptions.	✓	✓	✓	✓	✓	✓
<b>Traffic and Transportation</b>								
TRAN-1	<p>The applicant will develop and implement a Traffic Control Plan to minimize disruptions to surface travel and protect the safety of workers and the traveling public. The Traffic Control Plan will include, but not be limited to, the following:</p> <ul style="list-style-type: none"> <li>coordination with local transportation agencies</li> </ul>	Preparation of a Traffic Control Plan would limit the potential disturbance to individuals traveling on local roadways and reduce the potential for impacts to emergency service providers.	✓	✓	✓	✓	✓	✓

Table 3-8 Applicant Proposed Measures

APM Number	Description	Justification	Project Component					
			625 Line		650 Line	132/650 Line Double-Circuit	Northstar Fold	Substations
			Existing	New				
	<p>and emergency service providers for temporary lane and road closures and implementation of measures to maintain emergency vehicle access;</p> <ul style="list-style-type: none"> <li>/// provide mechanisms to prevent construction activities from interfering with emergency response or emergency evacuation plans in the event an evacuation plan were to be activated during the construction period;</li> <li>/// identification of any time restrictions on construction activities that could affect roadways;</li> <li>/// traffic control measures (flagging methods, signage, reduced speeds in work zones, parking restrictions);</li> <li>/// provision for maintaining safe pedestrian and bicycle travel (e.g., signage to direct pedestrians and bicyclists to safe routes around construction areas); and</li> <li>/// public outreach advising the travelling public of construction activity and travel restrictions.</li> </ul> <p>The Traffic Control Plan measures will be monitored by the applicant for effectiveness and adjustments will be made as needed to the implementation of the Traffic Control Plan to further minimize travel disruptions and maintain safety. The Traffic Control Plan will meet the requirements of agencies with jurisdiction over the roadways being affected, such as Caltrans for I-80 and SR 267 effects, and TRPA if any actions trigger TRPA code 22.7.6 Traffic Mitigation requirements within the Lake Tahoe Basin.</p>							